

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

Access DB# 5680

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: SHAMIM AHMED Examiner #: 75030 Date: 12/17/01
Art Unit: 1746 Phone Number 305-1929 Serial Number: 09/595,415
Mail Box and Bldg/Room Location: CP37B32 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Etching agent & method of Cu.

Inventors (please provide full names): SEKI, Hitoshi et al.

Earliest Priority Filing Date: 6/18/99

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>Ed</u>	NA Sequence (#) _____	STN <u>\$315.50</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>(1)</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic <u>(and)</u>	Dr. Link _____
Date Completed: <u>12-19-01</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>15</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>125</u>	Other _____	Other (specify) _____

=> file reg

FILE 'REGISTRY' ENTERED AT 12:07:43 ON 19 DEC 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2001 American Chemical Society (ACS)

=> display history full 11-

FILE 'HCAPLUS' ENTERED AT 09:54:31 ON 19 DEC 2001

L1 11244 SEA SEKI ?/AU
L2 37 SEA CHUL ?/AU
L3 0 SEA L1 AND L2

FILE 'REGISTRY' ENTERED AT 09:55:59 ON 19 DEC 2001

L4 E POTASSIUM HYDROGEN PEROXOMONOSULFATE/CN
2 SEA "POTASSIUM HYDROGEN PEROXOMONOSULFATE"/CN OR
"POTASSIUM HYDROGEN PEROXYMONOSULFATE MONOHYDRATE"/CN

E SODIUM HYDROGEN PEROXOMONOSULFATE/CN
E PEROXYMONOSULFURIC ACID, MONOSODIUM SALT/CN
L5 1 SEA "PEROXYMONOSULFURIC ACID, MONOSODIUM SALT"/CN
E PEROXYDISULFURIC ACID, DIPOTASSIUM SALT/CN
L6 1 SEA "PEROXYDISULFURIC ACID-35S2, DIPOTASSIUM SALT"/CN
E H2O8S2.2K/MF
L7 3 SEA H2O8S2.2K/MF
SEL L7 1,3 RN
L8 2 SEA (39034-15-6/BI OR 7727-21-1/BI)
E H2O8S2.2NA/MF
L9 1 SEA H2O8S2.2NA/MF
E AMMONIUM PERSULFATE/CN
L10 1 SEA "AMMONIUM PERSULFATE"/CN
E HYDROFLUORIC ACID/CN
L11 1 SEA "HYDROFLUORIC ACID"/CN
E HYDROCHLORIC ACID/CN
L12 1 SEA "HYDROCHLORIC ACID"/CN
E PHOSPHORIC ACID/CN
L13 1 SEA "PHOSPHORIC ACID"/CN
E NITRIC ACID/CN
L14 1 SEA "NITRIC ACID"/CN
L15 100 SEA 13445-49-3/CRN
L16 54 SEA 7722-86-3/CRN
L17 112 SEA (L15 OR L16) AND M/ELS
L18 0 SEA (L15 OR L16) AND H4N
L19 27 SEA (L15 OR L16) AND H3N
L20 96 SEA (L17 OR L19) NOT C/ELS

FILE 'LCA' ENTERED AT 10:37:08 ON 19 DEC 2001

L21 441 SEA (ETCH? OR CHASE# OR CHASING# OR ENCHAS? OR ENGRAV?

OR EMBOSS? OR INCIS? OR IMPRINT? OR IMPRESS? OR ENCAUSTIC
?)/BI,AB

L22 0 SEA MICROETCH? OR MICROCHASE# OR MICROCHASING# OR
MICROENGRAV? OR MICROEMBOSS?

FILE 'REGISTRY' ENTERED AT 10:41:06 ON 19 DEC 2001

E COPPER/CN

L23 1 SEA COPPER/CN

E TITANIUM/CN

L24 1 SEA TITANIUM/CN

FILE 'LCA' ENTERED AT 10:43:12 ON 19 DEC 2001

L25 7645 SEA (FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR
OVERLAID? OR LAMIN? OR LAMEL? OR SHEET? OR LEAF? OR
FOIL? OR COAT? OR TOPCOAT? OR OVERCOAT? OR VENEER? OR
SHEATH? OR COVER? OR ENVELOP? OR ENCAS? OR ENWRAP? OR
OVERSPREAD?)/BI,AB

L26 126 SEA CLAD?

FILE 'HCA' ENTERED AT 10:45:15 ON 19 DEC 2001

L27 76040 SEA (L23 OR COPPER# OR CU) (2A) (L25 OR L26)

L28 49882 SEA (L24 OR TITANIUM# OR TI) (2A) (L25 OR L26)

FILE 'LCA' ENTERED AT 10:47:26 ON 19 DEC 2001

FILE 'HCA' ENTERED AT 10:55:49 ON 19 DEC 2001

L29 11626 SEA L20 OR CARO#(3A)ACID#(3A)SALT# OR ?PEROXYMONOSULFAT?
OR ?HYDROGENPEROXYMONOSULFAT? OR ?PEROXOMONOSULFAT? OR
?PEROXYDISULFAT? OR ?PEROXODISULFAT?

L30 557 SEA L4 OR KHSO5 OR (MONOPOTASSIUM# OR DIPOTASSIUM#) (2A) (P
ERSULFATE# OR PEROX!MONOSULFATE# OR PEROX!DISULFATE# OR
HYDROGENPEROX!MONOSULFATE# OR HYDROGENPEROX!DISULFATE#)

L31 119670 SEA L13 OR (PHOSPHORIC# OR ORTHOPHOSPHORIC#) (2A)ACID# OR
H3PO4

L32 52535 SEA L14 OR NITRIC#(2A)ACID#

L33 590713 SEA L11 OR (HYDROCHLORIC# OR MURIATIC#) (2A)ACID# OR
HYDROGEN#(2A)CHLORIDE# OR HCL

L34 108110 SEA L11 OR HYDROFLUORIC#(2A)ACID# OR HYDROGEN#(2A)FLUORID
E# OR HF

L35 73 SEA L5 OR NAHSO5

L36 12379 SEA L8 OR K2S2O8

L37 2296 SEA L9 OR NA2S2O8

L38 4108 SEA L10 OR NH4(2A)S2O8

L39 221 SEA (L21 OR L22) AND L28 AND L27

L40 1 SEA L39 AND L30

L41 1 SEA L39 AND L29

L42 7 SEA (L21 OR L22) AND L30

L43 414 SEA (L21 OR L22) AND L29

L44 4 SEA L43 AND L28

L45 98 SEA L43 AND L27

L46 4 SEA L45 AND L34

L47 6 SEA L45 AND L33

L48 22 SEA L45 AND ?CHLORID?
L49 22 SEA L48 AND (L28 OR L27)
L50 91 SEA L43 AND (L31 OR L33)

FILE 'REGISTRY' ENTERED AT 11:24:15 ON 19 DEC 2001
E MOLYBDENUM/CN

L51 1 SEA MOLYBDENUM/CN

FILE 'LCA' ENTERED AT 11:25:18 ON 19 DEC 2001

L52 55 SEA (L51 OR MOLYBDENUM# OR MO) (2A) (L25 OR L26)

FILE 'HCA' ENTERED AT 11:26:25 ON 19 DEC 2001

L53 15338 SEA (L51 OR MOLYBDENUM# OR MO) (2A) (L25 OR L26)
L54 1 SEA L50 AND L53
L55 1 SEA (L21 OR L22) AND (L30 OR L29) AND L53
L56 405 SEA (L21 OR L22) AND (L35 OR L36 OR L37 OR L38)
L57 4 SEA (L21 OR L22) AND L35
L58 104 SEA (L21 OR L22) AND L36
L59 92 SEA (L21 OR L22) AND L37
L60 271 SEA (L21 OR L22) AND L38
L61 32 SEA (L58 OR L59 OR L60) AND L34
L62 60 SEA (L58 OR L59 OR L60) AND L33
L63 27 SEA L61 AND L62
L64 3 SEA L63 AND (L28 OR L27 OR L53)

FILE 'LCA' ENTERED AT 11:38:23 ON 19 DEC 2001

L65 2907 SEA L23 OR COPPER# OR CU

FILE 'HCA' ENTERED AT 11:40:48 ON 19 DEC 2001

L66 7 SEA (L21 OR L22) AND L30
L67 2 SEA L66 AND L65
L68 414 SEA (L21 OR L22) AND L29
L69 223 SEA L68 AND L65
L70 12 SEA L69 AND L34
L71 24 SEA L69 AND L33
L72 10 SEA L70 AND L71

FILE 'LCA' ENTERED AT 11:56:03 ON 19 DEC 2001

L73 1273 SEA L24 OR TITANIUM# OR TI

FILE 'HCA' ENTERED AT 11:57:41 ON 19 DEC 2001

L74 24 SEA L68 AND L73
L75 8 SEA L74 AND L34
L76 12 SEA L74 AND L33
L77 7 SEA L75 AND L76
L78 14 SEA (L21 OR L22) AND (L29 OR L30) AND L73 AND L65
L79 7 SEA L40 OR L41 OR L42 OR L67
L80 28 SEA L44 OR L46 OR L47 OR L54 OR L55 OR L72 OR L77 OR L78
L81 27 SEA L80 NOT L79
L82 18 SEA L48 NOT L81
L83 6 SEA L57 OR L64
L84 5 SEA L83 NOT L79

L85 16 SEA L63 NOT (L79 OR L81 OR L82 OR L84)

=> file hca

FILE 'HCA' ENTERED AT 12:08:19 ON 19 DEC 2001
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
 COPYRIGHT (C) 2001 AMERICAN CHEMICAL SOCIETY (ACS)

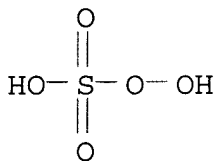
=> d 179 1-7 ibib abs hitstr hitind

L79 ANSWER 1 OF 7 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 134:216151 HCA
 TITLE: Aqueous **etchant**, electric circuit board, and its manufacture using same **etchant**
 INVENTOR(S): Chou, Kui-che; Guan, Zhai
 PATENT ASSIGNEE(S): Frontec K. K., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001059191	A2	20010306	JP 2000-1127	20000106
PRIORITY APPLN. INFO.:			JP 1999-173431	A 19990618

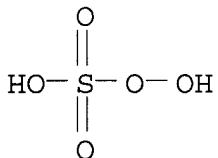
AB An aq. **etchant** for Cu contains KHSO₅.
 An aq. **etchant**, for a Ti film/
 Cu film laminate, contains KHSO₅
 and HF. Alternatively, an aq. **etchant** for the laminate
 contains a peroxosulfate and .gtoreq.1 selected from HF, HCl, a
 chloride, and a fluoride. An aq. **etchant**, for a Mo
 film/Cu film laminate,
 contains KHSO₅, H₃PO₄, and HNO₃. An aq. **etchant**
 , for a Cr film/Cu film
 laminate, contains KHSO₅ and HCl. In manuf. of an
 elec. circuit board, a Cu wiring or a wiring made of a
 Ti (alloy)/Cu laminate is formed by
 using the **etchant**. The elec. circuit board is also
 claimed. The **etching** proceeds without generation of
 tapered **etched** shape and stirring the **etchant**.
 IT 10058-23-8, Potassium peroxymonosulfate (
 KHSO₅) 28831-12-1, Sodium
 peroxymonosulfate (NaHSO₅)
 (aq. **etchant** contg. KHSO₅ for Cu (
 laminated with other metal film) and manuf. of elec.
 circuit board contg. Cu (laminate) wiring)

RN 10058-23-8 HCA
 CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX NAME)



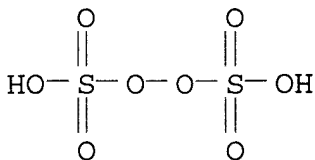
• K

RN 28831-12-1 HCA
 CN Peroxymonosulfuric acid, monosodium salt (9CI) (CA INDEX NAME)



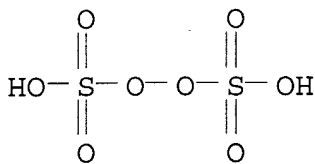
• Na

IT 7727-21-1 7727-54-0 7775-27-1, Sodium
 peroxodisulfate
 (aq. **etchant** contg. peroxosulfate for **Cu**
 /metal **lamine**te film and manuf. of elec.
 circuit board)
 RN 7727-21-1 HCA
 CN Peroxydisulfuric acid ([$(\text{HO})\text{S}(\text{O})_2$] $_2\text{O}_2$), dipotassium salt (9CI) (CA INDEX NAME)



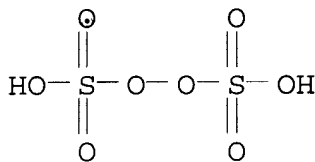
• 2 K

RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH_3

RN 7775-27-1 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 Na

IT 7440-32-6, **Titanium**, processes
 (laminated with **copper film**; aq.
etchant contg. peroxosulfate for **Cu**/metal
lamine film and manuf. of elec. circuit
 board)

RN 7440-32-6 HCA
 CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 7440-50-8, **Copper**, processes
 (wiring; aq. **etchant** contg. **KHSO5** for
Cu (laminated with other metal film) and manuf.
 of elec. circuit board contg. **Cu** (lamine)
 wiring)

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

- IC ICM C23F001-18
ICS C09K013-00; C09K013-06; H01L021-308; H01L021-3205; H01L029-786;
H01L021-336
- CC 76-14 (Electric Phenomena)
Section cross-reference(s): 56
- ST potassium hydrogenperoxosulfate **etchant etching**
copper; molybdenum **copper laminate** /
etching potassium **peroxymonosulfate**; chromium
molybdenum **copper laminate etching**
potassium hydrogenperoxosulfate; **titanium copper**
laminate etching potassium hydrogenperoxosulfate;
wiring **copper etching etchant**
potassium hydrogenperoxosulfate; elec circuit wiring **etching**
potassium hydrogenperoxosulfate
- IT Electric circuits
(aq. **etchant** contg. **KHSO5** for Cu (
laminated with other metal film) and manuf. of elec.
circuit board contg. Cu (**laminate**) wiring)
- IT Alkali metal chlorides
Alkali metal fluorides
Chlorides, uses
Fluorides, uses
(**etchant** component; aq. **etchant** contg.
peroxosulfate for Cu/metal **laminate**
film and manuf. of elec. circuit board)
- IT **Etching**
(**etchant**; aq. **etchant** contg. **KHSO5**
for Cu (**laminated** with other metal film) and
manuf. of elec. circuit board contg. Cu (
laminate) wiring)
- IT Electric conductors
(wiring; aq. **etchant** contg. **KHSO5** for
Cu (**laminated** with other metal film) and manuf.
of elec. circuit board contg. Cu (**laminate**)
wiring)
- IT Chromium alloy, base
Molybdenum alloy, base
Titanium alloy, base
(**laminated** with **copper film**; aq.
etchant contg. peroxosulfate for Cu/metal
laminate film and manuf. of elec. circuit
board)
- IT 10058-23-8, Potassium **peroxymonosulfate** (
KHSO5) 28831-12-1, Sodium
peroxymonosulfate (NaHSO5)
(aq. **etchant** contg. **KHSO5** for Cu (
laminated with other metal film) and manuf. of elec.
circuit board contg. Cu (**laminate**) wiring)

- IT 7727-21-1 7727-54-0 7775-27-1, Sodium peroxodisulfate (aq. **etchant** contg. peroxosulfate for Cu /metal **lamine**te film and manuf. of elec. circuit board)
- IT 64-19-7, Acetic acid, uses 7647-01-0, Hydrogen chloride, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses 7697-37-2, Nitric acid, uses (etchant component; aq. **etchant** contg. KHSO5 for Cu (**laminated** with other metal film) and manuf. of elec. circuit board contg. Cu (**lamine**te) wiring)
- IT 12125-01-8, Ammonium fluoride 12125-02-9, Ammonium chloride, uses (etchant component; aq. **etchant** contg. peroxosulfate for Cu/metal **lamine**te film and manuf. of elec. circuit board)
- IT 7439-98-7, Molybdenum, processes 7440-32-6, Titanium, processes 7440-47-3, Chromium, processes 12683-48-6 (**laminated** with copper film; aq. **etchant** contg. peroxosulfate for Cu/metal **lamine**te film and manuf. of elec. circuit board)
- IT 7440-50-8, Copper, processes (wiring; aq. **etchant** contg. KHSO5 for Cu (**laminated** with other metal film) and manuf. of elec. circuit board contg. Cu (**lamine**te) wiring)

L79 ANSWER 2 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 133:141680 HCA

TITLE: Electrochemical regeneration of solutions based on hydrogen peroxide & persulfates

AUTHOR(S): Kruglikov, Sergei S.; Turaev, Dmitri Yu.

CORPORATE SOURCE: S.S. Kruglikov Consultants, Moscow, Russia

SOURCE: Proc. - AESF SUR/FIN Annu. Int. Tech. Conf.

→ (1999) 669-676 /

CODEN: PASCPU

PUBLISHER: American Electroplaters and Surface Finishers Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Acid solns. based on hydrogen peroxide or peroxydisulfates were used for chem. treatment (**etching**, pickling, etc.) of copper and its alloys. Spent solns. contg. metal ions (copper, etc.) were subjected to electrolysis in nondivided, two- and three-compartment cells. Depending on the particular situation (compn. of the soln., cost of chems. and elec. power), the most economical procedure may include: removal of metal ions, accompanied by the destruction of an oxidant; selective removal of only metal ions; complete regeneration (removal of metal ions and simultaneous synthesis of an oxidant). Simultaneous removal of

copper ions and anodic synthesis of ammonium peroxydisulfate is the most efficient regeneration process, both economically and environmentally.

IT 7440-50-8P, **Copper**, properties

(**etching** by hydrogen peroxide or peroxydisulfates:

electrochem. regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 72-2 (Electrochemistry)

Section cross-reference(s): 56, 60, 78

ST electrochem regeneration soln hydrogen peroxide peroxydisulfate;

etching copper hydrogen peroxide peroxydisulfate

electrochem regeneration soln; anodic synthesis ammonium

peroxydisulfate **copper** removal; electrodeposition

copper electrochem regeneration soln hydrogen peroxide peroxydisulfate

IT Wastewater treatment

(electrochem.; of **copper** spent **etching** soln.)

IT **Etching**

(of **copper** by hydrogen peroxide or peroxydisulfates:

electrochem. regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

IT Electrodeposition

(of **copper**: electrochem. regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

IT 7727-54-0P, Diammonium peroxydisulfate

(anodic synthesis with simultaneous removal of **copper**:

electrochem. regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

IT 7440-50-8P, **Copper**, properties

(**etching** by hydrogen peroxide or peroxydisulfates:

electrochem. regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

IT 7727-21-1P, **Dipotassium peroxydisulfate**

7775-27-1P, Disodium peroxydisulfate

(in **etching** of **copper**: electrochem.

regeneration of solns. based on hydrogen peroxide and peroxydisulfates)

L79 ANSWER 3 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 132:259905 HCA

TITLE: Chemiluminescent reaction of fluorescent organic compounds with **KHSO5** using cobalt(II) as catalyst and its first application to molecular **imprinting**

AUTHOR(S): Lin, Jin-Ming; Yamada, Masaaki

CORPORATE SOURCE: Department of Applied Chemistry Graduate School

of Engineering, Tokyo Metropolitan University,
Hachioji Tokyo, 192-0397, Japan

SOURCE: Anal. Chem. (2000), 72(6), 1148-1155
CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

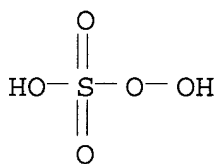
LANGUAGE: English

AB The decompn. of peroxomonosulfate (HSO₅⁻) was studied by chemiluminescence (CL). A weak CL was obsd. during mixing the HSO₅⁻ soln. with the Co₂⁺ soln. in unbuffered conditions. An appropriate amt. of fluorescent org. compds. (FOCs), such as dansyl amino acids and pyrene, was added to the **KHSO₅**/Co₂⁺ soln., a strong CL was recorded. A possible CL mechanism, based on studies of the fluorescence, CL, and UV-visible spectra and comparison of Co₃⁺ oxidn. ability with the SO₄.bul.- radical ion, is discussed. The CL from HSO₅⁻/Co₂⁺ is the emission of singlet oxygen produced from the catalytic decompn. of HSO₅⁻. Probably the decompn. of HSO₅⁻ in aq. soln. with Co₂⁺ proceeds via 1-electron transfer to yield SO₄.bul.- radical ion. The FOC was attacked by SO₄.bul.- radical ion and oxidized to decomp. into small mols. During this proceeding, CL emission was given out. The present CL system was developed as a flow injection anal. for FOCs. The detection limits (S/N = 3) were in the concn. range 10⁻⁹-10⁻⁷ M for FOCs. Oxidn. decompn. and CL emission of the analytes were used in the mol. **imprinting** recognition. As an initial attempt, dansyl-L-phenylalanine was used as a template mol. and methacrylic acid and 2-vinylpyridine were used as functional monomers. The network copolymer **imprinted** with dansyl-L-phenylalanine exhibits an affinity for the template mol. When the flowing streams of HSO₅⁻ and Co₂⁺ solns. mixing through the molecularly **imprinted** polymer particles filled the flow cell, the template mol., dansyl-L-phenylalanine reacted with the HSO₅⁻/Co₂⁺ soln. and CL was emitted. The dansyl-L-phenylalanine was decompd. during the CL process, and the cavities of a defined shape and an arrangement of functional groups complementary to the template in the polymer were left for the next sample anal.

IT **10058-23-8**, Potassium peroxymonosulfate (**KHSO₅**)
(chemiluminescent reaction of fluorescent org. compds. with **KHSO₅** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)

RN **10058-23-8** HCA

CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX NAME)



0 K

- CC 80-6 (Organic Analytical Chemistry)
Section cross-reference(s): 22, 37, 72
- IT Optical sensors
(chemiluminescence; chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)
- IT Flow injection systems
Luminescence, chemiluminescence
Reduction catalysts
(chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)
- IT 10124-43-3, Cobalt(II) sulfate
(catalyst; chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)
- IT 10058-23-8, Potassium peroxymonosulfate (**KHSO5**)
(chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)
- IT 61-73-4, Methylene blue 85-01-8, Phenanthrene, analysis 90-13-1, 1-Chloronaphthalene 129-00-0, Pyrene, analysis 134-32-7, 1-Aminonaphthalene 146-17-8, Flavin mononucleotide 581-64-6, Thionin 610-49-1, 1-Aminoanthracene 989-38-8, Rhodamin 6G 1091-85-6, Dansyl Glycine 1098-50-6, Dansyl Valine 1100-24-9, Dansyl Aspartic acid 1104-36-5, Dansyl Phenylalanine 1606-67-3, 1-Aminopyrene 5522-43-0, 1-Nitropyrene 19461-29-1, Dansyl Tryptophan
(org. analyte; chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol. **imprinted** polymers)
- IT 152976-45-9P, Ethylene glycol dimethacrylate-methacrylic acid-2-vinylpyridine copolymer
(org. mol. **imprinted**; chemiluminescent reaction of fluorescent org. compds. with **KHSO5** using cobalt(II) as catalyst and its application to flow-injection anal. using mol.

imprinted polymers)

REFERENCE COUNT:

59

REFERENCE(S):

- (1) Agater, I; Anal Chim Acta 1997, V356, P289 HCA
 - (2) Appelblad, P; Anal Chem 1998, V70, P5002 HCA
 - (3) Ball, D; J Am Chem Soc 1956, V78, P1125 HCA
 - (5) Berliner, E; J Am Chem Soc 1958, V80, P343 HCA
 - (7) Bjarnason, B; Anal Chem 1999, V71, P2152 HCA
- ALL CITATIONS AVAILABLE IN THE RE FORMAT

L79 ANSWER 4 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER:

119:283920 HCA

TITLE:

Considering the instability of
peroxomonosulfates when used as micro-
etchant

AUTHOR(S):

Rulach, B.

CORPORATE SOURCE:

Berlin, D-12681, Germany

SOURCE:

Galvanotechnik (1993)-/ 84(9), 3101-103
CODEN: GVTKEY; ISSN: 0016-4232

DOCUMENT TYPE:

Journal

LANGUAGE:

German

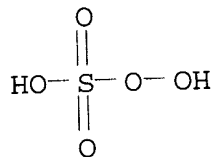
AB The peroxymonosulfate used for micro-etching in the form of the triple salt (45% **KHSO5**, 25% KHSO4, and 30% K2SO4) decomps. at a rate proportional to its concn. in soln., the bath temp., and its pH value. Values for its decompn. rate as well as guidance as to its economical use are given. Total consumption of the triple salt for micro-**etching** of printed circuit boards is given in terms of a model calcn.

IT 10058-23-8

(decompn. of, micro-**etching** of printed circuit boards
in relation to)

RN 10058-23-8 HCA

CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX
NAME)



● K

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 49, 56

ST potassium hydrogen peroxymonosulfate **etchant** decompn;
circuit board **etching** peroxymonosulfate stability

IT **Etching**
(micro-, of printed circuit boards by triple salt,
peroxymonosulfate decompn. in)
IT Decomposition
(of peroxymonosulfate in triple salt for micro-**etching**
of printed circuit boards)
IT Electric circuits
(printed, boards, micro-**etching** of, by triple salt,
peroxymonosulfate decompn. in)
IT **10058-23-8**
(decompn. of, micro-**etching** of printed circuit boards
in relation to)
IT 7646-93-7 7778-80-5, Potassium sulfate, uses
(triple salt contg., peroxymonosulfate decompn. in, micro-
etching of printed circuit boards in relation to)

L79 ANSWER 5 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 114:90524 HCA

TITLE: Electrochemical characterization of
polycrystalline zinc oxide layers.

AUTHOR(S): De Wit, A. R.; Janssen, M. D.; Kelly, J. J.

CORPORATE SOURCE: Debye Res. Inst., Univ. Utrecht, Utrecht, 3508
TA, Neth.

SOURCE: Appl. Surf. Sci. (1990), 45(1), 21-7

CODEN: ASUSEE; ISSN: 0169-4332

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Thin layers of sputtered ZnO were characterized by electrochem.
methods. In SEM micrographs of photoanodically and cathodically
etched layers, the grain boundaries could be recognized
unambiguously. The layers have a columnar structure and the grain
size measured in this way is in agreement with that detd. indirectly
from elec. measurements.

CC 72-2 (Electrochemistry)
Section cross-reference(s): 66

ST zinc oxide surface structure electrochem method; **etching**
photoelectrochem zinc oxide surface structure; electroredn zinc
surface structure

IT **Etching**
(photoelectrochem., of zinc oxide in potassium sulfate soln.)

IT 7727-21-1, **Dipotassium peroxydisulfate**
(elec. current-potential relationship for zinc oxide electrode in
soln. contg. potassium sulfate and)

IT 7778-80-5, Dipotassium sulfate, uses and miscellaneous
(photoelectrochem. **etching** of zinc oxide in soln.
contg., surface structure in relation to)

L79 ANSWER 6 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 100:35808 HCA

TITLE: Chemically sculpturing wool pile fabrics

INVENTOR(S): Dusenbury, Joseph H.; McBride, Daniel T.

PATENT ASSIGNEE(S): Milliken Research Corp., USA

SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4415331	A	19831115	US 1982-357008	19820311
CA 1198253	A1	19851224	CA 1983-421670	19830215
AU 8311746	A1	19830915	AU 1983-11746	19830222
AU 562203	B2	19870604		

PRIORITY APPLN. INFO.: US 1982-357008 19820311

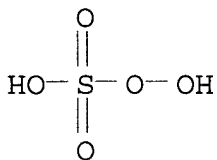
AB Wool or wool-nylon pile fabrics are sculptured by oxidn. of the sulfide bonds accompanied by acid hydrolysis, contacting the pile surface at selected areas with a fiber-degrading compn. contg. a fiber-degrading agent (an arom. sulfonic acid with pK A <2) at a concn. sufficient to reduce the tensile strength of the fibers so that they may be removed by mech. action and a diluent, heating to cause redn. in tensile strength, and removing the degraded fibers by mech. means. Thus, a wool tufted carpet was treated with an oxidn. compn. contg. 0.42% peracetic acid [79-21-0] and 0.78% glacial AcOH in water with a 20:1 oxidn. compn.-wool carpet face wt. ratio for 30 min and 50.degree., washed, dried in a hot-air dryer at 230.degree.F, wet to .apprx.80% pickup with an aq. soln. of xanthan gum, treated in selected areas with a compn. contg. p-toluenesulfonic acid [104-15-4] 35, xanthan gum 0.5, mineral oil 2, and acid dye 0.185%, with the remainder being water, steamed 2 min and 212.degree.F, washed at 70.degree.F, dried at 230.degree.F in a conventional hot air dryer, and subjected to a mech. beating action or the entire fabric surface before vacuuming.

IT 10058-23-8

(oxidn. by, of wool carpets, in sculpturing)

RN 10058-23-8 HCA

CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX NAME)



0 K

IC D06Q001-02
 NCL 008114600

CC 40-9 (Textiles)

IT **Embossing**

(chem., of wool carpets, by oxidn. and toluenesulfonic acid)

IT 79-21-0 107-32-4 7722-64-7 7722-84-1, reactions 7722-86-3
7782-50-5, reactions **10058-23-8**

(oxidn. by, of wool carpets, in sculpturing)

L79 ANSWER 7 OF 7 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 82:159633 HCA

TITLE: Smut remover for aluminum

INVENTOR(S): Mori, Teruo

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd.

SOURCE: Ger. Offen., 22 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2427601	A1	19750116	DE 1974-2427601	19740607
DE 2427601	C2	19861204		
JP 50015739	A2	19750219	JP 1973-66362	19730614
CA 1055822	A1	19790605	CA 1974-201801	19740606
US 3988254	A	19761026	US 1974-479378	19740614
			JP 1973-66362	19730614

PRIORITY APPLN. INFO.:

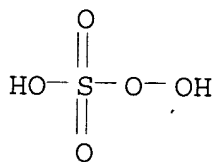
AB Smut is removed from Al surfaces by treatment with an aq. soln. contg. water-sol. MHSO5 and MHSO4 compds. (where M is K, Na, or NH4), polyphosphoric acid (e.g. H6P4O13), and/or a neutral water-sol. salt (e.g. alkali metal or NH4 salt). The MHSO5 concn. is 0.2-5.0 while MHSO4 concn. is 10-30 wt.%. Thus, an Al-1.2% Mn sheet 0.3 mm thick was **etched** 1 min at 70.degree. in an aq. 10% Na3PO4.12H2O soln. and rinsed. Then, the sheet was immersed in a smut-removing soln. contg. **KHSO5** 20, KHSO4 60, K2SO4 20, and H6P4O13 30 g/1000g H2O. The smut was removed in 1.3 sec without affecting the surface properties. A similarly **etched** sheet was treated with a conventional soln. contg. 50 CrO3 and 300 g concd. H2SO4/1000g H2O. Removal of smut occurred after 3 sec.

IT **10058-23-8**

(smut removal by, from aluminum)

RN 10058-23-8 HCA

CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX NAME)



• K

IC C23G
CC 56-5 (Nonferrous Metals and Alloys)
IT 7646-93-7 7647-01-0, uses and miscellaneous 7664-93-9, uses and
miscellaneous 7697-37-2, uses and miscellaneous 7778-80-5, uses
and miscellaneous 8017-16-1 **10058-23-8** 11115-74-5
(smut removal by, from aluminum)

=> d 184 1-5 ibib abs hitstr hitind

L84 ANSWER 1 OF 5 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 134:304293 HCA
 TITLE: Printed circuit board with continuous connective bumps
 INVENTOR(S): Appelt, Bernd Karl-Heinz; Bupp, James Russell; Farquhar, Donald Seton; Keesler, Ross William; Klodowski, Michael Joseph; Seman, Andrew Michael; Schild, Gary Lee
 PATENT ASSIGNEE(S): International Business Machines Corporation, USA
 SOURCE: U.S., 19 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

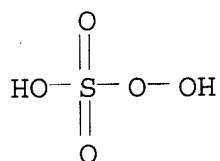
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6222136	B1	20010424	US 1997-968988	19971112
US 2001032828	A1	20011025	US 2001-789156	20010220
			US 1997-968988	A3 19971112

PRIORITY APPLN. INFO.:

AB A printed circuit board comprising a plurality of conductive bumps having substantially coplanar upper surfaces is provided. The circuit board is formed by providing: a substantially planar metallic layer having a 1st thickness on .gtoreq.1 surface of the dielec.; applying a 1st photoresist on the metal layer; imaging the 1st photoresist to define a pattern of conductive bumps; **etching** the exposed portions of the metal layer to a 2nd thickness to form the conductive bumps; removing the 1st photoresist; applying a 2nd photoresist to the metal layer; imaging the 2nd photoresist to define a pattern of circuitry; **etching** the exposed portions of the metal layer to provide the elec. circuitry; and removing the 2nd photoresist. The present invention also provides a method for prepg. printed circuit boards in which 2 conductive layers that are disposed on opposing sides of a dielec. layer are inter-connected by .gtoreq.1 of the substantially coplanar conductive bumps. The method comprises the addnl. steps of depositing a 2nd dielec. layer on the substantially coplanar conductive bumps and circuitry; exposing the upper surface of .gtoreq.1 of the conductive bumps; and depositing a 2nd metal layer on the 2nd dielec. layer and the exposed upper surface of the conductive bump. The present invention is also related to a method for prepg. a reinforced panel. The method comprises the steps of: applying a metal layer having a 1st height on .gtoreq.1 surface of a dielec. substrate; applying a 1st photoresist to the metal layer; imaging the photoresist to provide .gtoreq.1 section of remaining photoresist defining an opening therein and .gtoreq.1 exposed region of the metal layer; **etching** the exposed region of the metal layer to a 2nd height; and removing the remaining photoresist

to provide a multi-layered structure comprising a dielec. layer and a metal layer comprising .gtoreq.1 region having a 2nd height and .gtoreq.1 region having a 1st height.

IT 28831-12-1, Sodium persulfate
(**etchant**; printed circuit board with continuous connective bumps)
RN 28831-12-1 HCA
CN Peroxymonosulfuric acid, monosodium salt (9CI) (CA INDEX NAME)



Na

IC ICM H05K001-00
NCL 174254000
CC 76-14 (Electric Phenomena)
IT Bump contacts
Dielectric films
Etching
Interconnections (electric)
Photolithography
(printed circuit board with continuous connective bumps)
IT 7447-39-4, Cupric chloride, processes 7647-01-0, Hydrogen chloride, processes 7705-08-0, Ferric chloride, processes 28831-12-1, Sodium persulfate
(**etchant**; printed circuit board with continuous connective bumps)

REFERENCE COUNT: 17
REFERENCE(S): (1) Anon; DE 2353276 1974 HCA
(7) Hanabusa; US 4372804 1983 HCA
(12) Masui; US 4983252 1991 HCA
(13) Morgan; US 3767398 1973 HCA
(15) Okabe; US 5200026 1993 HCA
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 2 OF 5 HCA COPYRIGHT 2001 ACS
ACCESSION NUMBER: 120:67546 HCA
TITLE: Regeneration of **microetch** cleaning compositions
INVENTOR(S): Condra, Richard C.; Healey, Paul C.
PATENT ASSIGNEE(S): Oliver Sales Co., USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent

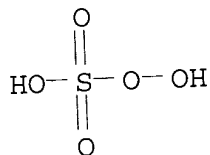
LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5259979	A	19931109	US 1993-3570	19930113

AB * This invention is a process to rejuvenate the depleted metal salt oxidizing agents in used **microetch** cleaning compns., esp. for cleaning of Cu surfaces, and to maintain the desired **etch** rate. This process comprises the steps of: (1) measuring the reduced metal salt oxidizing agent in the **microetch** cleaning compn., (2) adding a rejuvenating agent in a stoichiometric or sub-stoichiometric quantity, and (3) mixing and allowing the rejuvenating agent to react with the reduced metal salt oxidizing agent to restore the concn. of the metal salt oxidizing agent to its approx. concn. in the original **microetch** cleaning compn.

IT 28831-12-1, Sodium monopersulfate
 (oxidizing agent, in regeneration of **microetch** cleaning compns.)

RN 28831-12-1 HCA
 CN Peroxymonosulfuric acid, monosodium salt (9CI) (CA INDEX NAME)



• Na

IC ICM C09K013-04
 ICS B44C001-22; C23F001-00

NCL 252079200

CC 76-14 (Electric Phenomena)

ST regeneration **microetch** cleaning compn; copper
microetch cleaning compn regeneration

IT **Etching**
 (micro-, in cleaning of copper surfaces, regeneration of compns. for)

IT Solvents
 (cleaning, **microetch**, regeneration of compns. for)

IT 7647-01-0, Hydrochloric acid, uses 7664-93-9, Sulfuric acid, uses 7705-08-0, Iron chloride (FeCl₃), uses 7778-50-9, Chromium potassium oxide (Cr₂K₂O₇) 15158-11-9, Copper ion (Cu²⁺), uses **microetch** cleaning compns. contg., regeneration of)

IT 7440-50-8, Copper, miscellaneous

(**microetch** cleaning compns. for, regeneration of)
 IT 1313-60-6, Sodium peroxide 2950-43-8, Hydroxylamine-O-sulfonic acid 7722-84-1, Hydrogen peroxide, uses 7727-21-1, Potassium peroxydisulfate 7727-54-0, Ammonium peroxydisulfate 7775-27-1, Sodium peroxydisulfate 11138-47-9, Sodium perborate 12653-78-0, Potassium perborate 17014-71-0, Potassium peroxide 25482-78-4, Potassium monopersulfate **28831-12-1**, Sodium monopersulfate (oxidizing agent, in regeneration of **microetch** cleaning compns.)

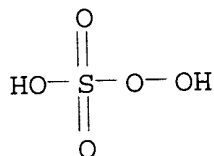
L84 ANSWER 3 OF 5 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 117:218009 HCA
 TITLE: Surface treatment of copper and copper alloys
 INVENTOR(S): Yoshioka, Takashi; Kinoshita, Masashi; Murai, Takayuki
 PATENT ASSIGNEE(S): Shikoku Chemicals Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04165083	A2	19920610	JP 1990-293402	19901029
JP 2834884	B2	19981214		

OTHER SOURCE(S): MARPAT 117:218009

AB Cu or Cu alloy surface is treated with aq. solns. contg. 2-C.gto req. 3 alkylbenzimidazoles, org. acid, and then aq. solns. contg. .gtorsim.50 ppm Ba2+ ion and optionally halogen ion, Cu compd. or Zn compd. Heat-resistant conversion coatings useful in fabrication of printed wiring boards can be formed. The treated metals showed excellent solder wettability.
 IT **28831-12-1**, Sodium persulfate
 (soft **etchant**, copper treatment solns. contg., alkylbenzimidazole and org. acid and barium ion in, for solder wettability)

RN 28831-12-1 HCA
 CN Peroxymonosulfuric acid, monosodium salt (9CI) (CA INDEX NAME)



IC ICM C23C022-52
 CC 56-6 (Nonferrous Metals and Alloys)
 Section cross-reference(s): 76
 IT **28831-12-1**, Sodium persulfate
 (soft **etchant**, copper treatment solns. contg.,
 alkylbenzimidazole and org. acid and barium ion in, for solder
 wettability)

L84 ANSWER 4 OF 5 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 114:190709 HCA

TITLE: **Etching** process for removal of tin and
 tin-lead alloy **layers** on
copper substrates

INVENTOR(S): Haruta, Takashi; Nagano, Takaharu; Kishimoto,
 Takeyoshi; Yamada, Yasushi; Yuno, Tomoko

PATENT ASSIGNEE(S): Mec K. K., Japan

SOURCE: Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 413261	A2	19910220	EP 1990-115319	19900809
EP 413261	A3	19920115		
R: BE, DE, GB, IT, NL				
JP 03075386	A2	19910329	JP 1989-211497	19890818
US 5035749	A	19910730	US 1990-563197	19900806
			JP 1989-211497	19890818

PRIORITY APPLN. INFO.:

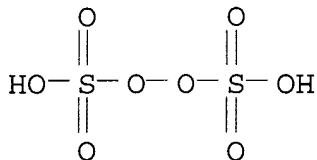
AB The **etching** process consists of: (1) dissolving the Sn or
 Sn-Pb alloy layer in the redox bath contg. an arom. compd. with a
 nitro substituent (preferably Na n-nitrobenzenesulfonate [I]), an
 org. or inorg. acid (preferably HNO₃), and a halogen-contg. compd.
 (esp. NaCl); and (2) addnl. oxidative dissoln. of the Sn-Ca
 intermetallic compd., esp. with an aq. bath contg. FeCl₃, CuCl₂, or
 persulfates. The process is suitable for removal of Sn-contg.
 solder residue from Cu on elec. printed-circuit board, and leaves no
 pptd. residue on Cu. Thus, the Sn-40% Pb solder layer on
 epoxy-glass board having a Cu pattern was removed in 30 s by the 1st
etching in aq. bath contg. I 100, HNO₃ 400, glycolic acid
 100, and NaCl 10 g/L. The residual **film** of Sn-Cu
 intermetallic compd. was resistant to **etching** by the 1st
 bath, but was removed in 5 s in the 2nd bath from aq. soln. of FeCl₃
 3 g/L. The 1st bath was stable in storage during the cumulative
 solder removal to .ltoreq.80 g/L.

IT **7727-54-0**, Ammonium persulfate

(**etching** bath contg., for copper, tin residue removal
 by)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT 7664-39-3, **Hydrofluoric acid**, uses and
miscellaneous
(**etching** bath contg., tin alloy removal by, on copper)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM C23F001-44

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 76

ST tin **etching** bath copper surface; solder tin lead
etching bath; elec circuit **etching** tin solder;
nitrobenzene compd **etching** tin solder; nitric acid
etching tin solder; halide bath **etching** tin
solder; persulfate bath **etching** tin solder

IT Peroxysulfates

(**etching** bath contg., for copper, tin residue removal
by)

IT Halides

(**etching** bath contg., tin alloy removal by, on copper
for elec. printed-circuit boards)

IT **Etching**

(of tin-contg. solder, on copper, two-bath process for)

IT Solders

(tin-contg., removal on copper surface of, two-stage
etching process for)

IT Electric circuits

(printed, boards, **copper layers** on, tin alloy
removal from, by two-stage **etching**)

IT 7447-39-4, Cupric chloride, uses and miscellaneous 7705-08-0,
Ferric chloride, uses and miscellaneous 7727-54-0,
Ammonium persulfate

(**etching** bath contg., for copper, tin residue removal
by)

IT 50-21-5, Lactic acid, uses and miscellaneous 64-19-7, Acetic acid,

uses and miscellaneous 75-75-2, Methanesulfonic acid 79-14-1,
 Glycolic acid, uses and miscellaneous 127-68-4, Sodium
 m-nitrobenzenesulfonate 5329-14-6, Sulfamic acid 7647-14-5,
 Sodium chloride, uses and miscellaneous **7664-39-3**,
Hydrofluoric acid, uses and miscellaneous
 7664-93-9, Sulfuric acid, uses and miscellaneous 7697-37-2; Nitric
 acid, uses and miscellaneous 12125-01-8, Ammonium fluoride
 16872-11-0, Borofluoric acid
 (**etching** bath contg., tin alloy removal by, on copper)
 IT 7440-31-5, Tin, uses and miscellaneous 12610-63-8 12643-16-2
 62258-61-1
 (removal of, on copper surface, two-stage **etching**
 process for)
 IT 7440-50-8, Copper, uses and miscellaneous
 (tin residues on, removal of, two-stage **etching** process
 for)

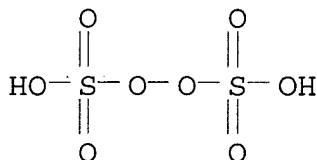
L84 ANSWER 5 OF 5 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 92:50109 HCA
 TITLE: Removing a cured epoxy resin film from a metal
 surface
 INVENTOR(S): Wong, Ching-Ping
 PATENT ASSIGNEE(S): Western Electric Co., Inc., USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4171240	A	19791016	US 1978-900367	19780426

AB Cured epoxy resin adhesives, which are used to **laminate**
Cu or other material to a suitable support in the prodn. of
 a photomask, can be removed by treatment with a swelling agent, then
 treatment with an oxidizing agent, and subsequently treatment with
 an **etchant** comprising H2SO4. Thus, a laminate consisting
 of a Teflon 100 FEP support, an epoxy resin adhesive **layer**
 , and a **Cu layer** was **coated** on the
Cu layer with Riston 116S photoresist, stored in
 the dark from 0.5 to 1 h, imagewise exposed, the photoresist
 developed in 1,1,1-trichloroethylene, the exposed **Cu**
layer removed by **etching**, the exposed epoxy resin
 swollen in CH2Cl2, immersed in 10% aq. ammonium persulfate at
 25.degree. for 30 s, and then immersed in 98% H2SO4 at 145% for 7 s
 to completely remove the exposed epoxy resin and give a finished
 photomask.
 IT **7664-39-3**, uses and miscellaneous **7727-54-0**
 (in epoxy resin adhesive removal in photomask fabrication)
 RN 7664-39-3 HCA
 CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)• 2 NH₃

IC B29C017-08

NCL 156630000

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)

IT 67-56-1, uses and miscellaneous 7664-38-2, uses and miscellaneous
7664-39-3, uses and miscellaneous 7664-93-9, uses and
miscellaneous 7722-84-1, uses and miscellaneous 7727-54-0
11115-74-5

(in epoxy resin adhesive removal in photomask fabrication)

=> d l85 1-16 ti

L85 ANSWER 1 OF 16 HCA COPYRIGHT 2001 ACS

TI Cleaning and **etching** compositions for silicon and silicon
oxide compound substrates for display devices

L85 ANSWER 2 OF 16 HCA COPYRIGHT 2001 ACS

TI Determination of light elements by plasma emission spectroscopy with
etching solutions

L85 ANSWER 3 OF 16 HCA COPYRIGHT 2001 ACS

TI Slurry composition used in semiconductor chemical-mechanical
planarization process

L85 ANSWER 4 OF 16 HCA COPYRIGHT 2001 ACS

TI Visible electroluminescence from n-type porous silicon/electrolyte
solution interfaces: time-dependent electroluminescence spectra

L85 ANSWER 5 OF 16 HCA COPYRIGHT 2001 ACS

TI Galvanic porous silicon formation without external contacts

- L85 ANSWER 6 OF 16 HCA COPYRIGHT 2001 ACS
TI The charge carriers accumulation mechanisms in the electrolyte-impregnated porous silicon: consequences on the luminescence
- L85 ANSWER 7 OF 16 HCA COPYRIGHT 2001 ACS
TI Light emission from porous silicon under photo-and electro-excitation
- L85 ANSWER 8 OF 16 HCA COPYRIGHT 2001 ACS
TI Removal of toxic compounds from plasma chemical **etching** waste gases
- L85 ANSWER 9 OF 16 HCA COPYRIGHT 2001 ACS
TI Selective photoetching of n-gallium arsenide/zinc selenide heterostructures
- L85 ANSWER 10 OF 16 HCA COPYRIGHT 2001 ACS
TI Aluminum surface preparation
- L85 ANSWER 11 OF 16 HCA COPYRIGHT 2001 ACS
TI The use of inductively coupled plasma in the semiconductor industry
- L85 ANSWER 12 OF 16 HCA COPYRIGHT 2001 ACS
TI Electroplating of holes in Teflon-based glass-fabric printed circuit boards
- L85 ANSWER 13 OF 16 HCA COPYRIGHT 2001 ACS
TI Kinetics and properties of chemically vapor-deposited tungsten films on silicon substrates
- L85 ANSWER 14 OF 16 HCA COPYRIGHT 2001 ACS
TI Application of lubricant carrier layers
- L85 ANSWER 15 OF 16 HCA COPYRIGHT 2001 ACS
TI **Engraving** a sheet of stainless steel
- L85 ANSWER 16 OF 16 HCA COPYRIGHT 2001 ACS
TI Radiochemical study of semiconductor surface contamination. III. Deposition of trace impurities on germanium and gallium arsenide

=> d 185 1,2,3,9,10,15 ibib abs hitstr hitind

L85 ANSWER 1 OF 16 HCA COPYRIGHT 2001 ACS
ACCESSION NUMBER: 135:187835 HCA
TITLE: Cleaning and **etching** compositions for silicon and silicon oxide compound substrates for display devices
INVENTOR(S): Lee, Ki Won

PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S., 18 pp., Cont.-in-part of U.S. 6,194,365.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6284721	B1	20010904	US 1999-358111	19990721
US 6194365	B1	20010227	US 1998-142750	19980915
PRIORITY APPLN. INFO.:			KR 1997-1539	A 19970121
			KR 1997-53384	A 19971017
			US 1998-142750	A2 19980915
			WO 1998-KR11	W 19980121

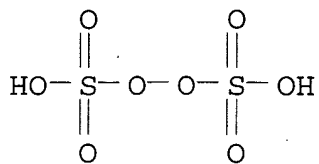
AB A cleaning and **etching** compn. for cleaning and **etching** substrates comprising quartz, glass, Si oxide or Si as a main constituent is disclosed. A cleaning compn. for cleaning substrates having a Si oxide layer comprises: a fluoride which decomps. and releases F⁻ ion in aq. soln. during cleaning and **etching** processes for reacting with Si; and a persulfate which decomps. and releases H₂O₂ in the aq. soln. for increasing the oxidn. effect of the fluoride. Display device substrates having Si oxide layer and LCD glass substrates can be cleaned without imparting damages, as a result, a safe cleaning process can be implemented. A cleaning compn. for cleaning substrates having a Si layer comprises a fluoride, an inorg. acid and/or HNO₃. The above cleaning compns. can also be suitably used as an **etchant** for **etching** Si and Si oxide layers. The cleaning and **etching** compn. of the present invention provides an effective control of **etching** rates, thus the factors related to the **etching** process can be flexibly adjusted.

IT 7664-39-3, **Hydrofluoric acid**, processes
 7727-21-1, Potassium peroxydisulfate (K₂S₂O₈)—
 7727-54-0, Ammonium persulfate 7775-27-1, Sodium
 persulfate
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

RN 7664-39-3 HCA
 CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

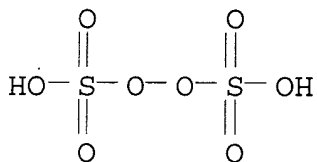
HF

RN 7727-21-1 HCA
 CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), dipotassium salt (9CI) (CA
 INDEX NAME)



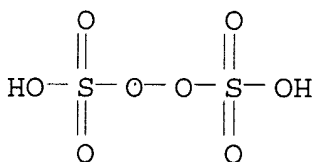
• 2 K

RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

RN 7775-27-1 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 Na

IC ICM C03C025-68
 NCL 510175000
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 ST cleaning **etching** silicon oxide display substrate
 IT Cleaning
Etching

Glass substrates
 Liquid crystal displays
 Optical imaging devices
 Oxidation
 Process control
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT Fluorides, processes
 Nitrates, processes
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT Silicate glasses
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT Acids, processes
 (inorg.; cleaning and **etching** compns. for silicon and
 silicon compd. substrates for display devices)

IT Aluminum alloy, base
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT 64-19-7, Acetic acid, processes 67-63-0, Isopropyl alcohol,
 processes 1306-38-3, Cerium dioxide, processes 1333-83-1, Sodium
 bifluoride 1341-49-7, Ammonium bifluoride (NH₄HF₂) 3006-15-3,
 Sodium dihexyl sulfosuccinate 5329-14-6, Sulfamic acid
 6484-52-2, Nitric acid ammonium salt, processes 7631-99-4, Nitric
 acid sodium salt, processes 7647-01-0, **Hydrochloric**
acid, processes 7664-38-2, Phosphoric acid, processes
 7664-39-3, **Hydrofluoric acid**, processes
 7681-49-4, Sodium fluoride, processes 7697-37-2, Nitric acid,
 processes 7727-21-1, Potassium peroxydisulfate (K₂S₂O₈) 7727-54-0, Ammonium persulfate
 7757-79-1, Potassium nitrate, processes 7775-27-1, Sodium
 persulfate 7787-32-8, Barium fluoride 7789-23-3, Potassium
 fluoride (KF) 7789-29-9, Potassium bifluoride 10022-31-8, Barium
 nitrate 12135-76-1, Ammonium sulfide ((NH₄)₂S) 13826-83-0,
 Ammonium tetrafluoroborate
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT 7722-84-1P, Hydrogen peroxide, reactions
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT 7440-21-3, Silicon, processes 7631-86-9, Silicon dioxide,
 processes 12033-89-5, Silicon nitride, processes 39396-75-3
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

IT 15092-81-6, Peroxydisulfate ((SO₃)₂O₂2-) 16984-48-8, Fluoride,
 reactions
 (cleaning and **etching** compns. for silicon and silicon
 compd. substrates for display devices)

REFERENCE COUNT: 16
 REFERENCE(S): (2) Anon; DE 1209844 1966 HCA
 (3) Anon; GB 1276550 1972 HCA

(4) Anon; EP 0106301 A1 1984 HCA
 (5) Barcelona; US 5164018 1992 HCA
 (6) Carlson; US 5393447 1995 HCA
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L85 ANSWER 2 OF 16 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 134:320279 HCA
 TITLE: Determination of light elements by plasma
 emission spectroscopy with **etching**
 solutions
 INVENTOR(S): Rouchaud, Jean-Claude; Fedoroff, Michel
 PATENT ASSIGNEE(S): Centre National De La Recherche Scientifique,
 Fr.
 SOURCE: PCT Int. Appl., 21 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001029540	A1	20010426	WO 2000-FR2867	20001013
W: CA, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
FR 2799838	A1	20010420	FR 1999-12967	19991018
PRIORITY APPLN. INFO.:			FR 1999-12967	A 19991018

AB A plasma emission spectroscopic method for anal. and detn. of light (mol. wt.) elements in solid or liq. samples consists of dissolving the sample in a bath contg. a reactant that can react with the sample (e.g., an **etching** agent), heating the sample (if necessary) to induce gas evolution, and injecting the gas directly into an inert gas plasma (e.g., He, Ar, Ne). The app. comprises an inert gas source, a plasma torch, a spectrometer, and a sample introduction means that includes the reactant (**etching**) soln. Suitable reactive solns. are sulfuric **acid**, **hydrofluoric acid**, phosphoric **acid**, and oxidants, such as nitric acid, potassium persulfate, and potassium periodate. The method was esp. useful for detn. of such light elements as carbon and nitrogen.

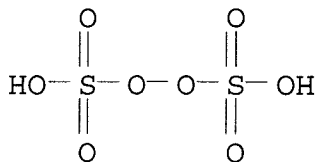
IT 7664-39-3, **Hydrofluoric acid**, uses
 7727-21-1, Potassium persulfate
 (**etching** soln.; detn. of light elements by plasma emission spectroscopy with **etching** solns.)

RN 7664-39-3 HCA
 CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7727-21-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dipotassium salt (9CI) (CA INDEX NAME)



0 2 .K

IC ICM G01N021-73
 CC 79-2 (Inorganic Analytical Chemistry)
 ST light element detn **etching** plasma emission spectroscopy
 IT **Etching**
 Plasma emission spectrometry
 Plasma torches
 (detn. of light elements by plasma emission spectroscopy with **etching** solns.)
 IT **Etching**
 (**etchants**; detn. of light elements by plasma emission spectroscopy with **etching** solns.)
 IT Elements
 (light; detn. of light elements by plasma emission spectroscopy with **etching** solns.)
 IT 7440-44-0, Carbon, analysis 7727-37-9, Nitrogen, analysis
 (detn. of; detn. of light elements by plasma emission spectroscopy with **etching** solns.)
 IT 7664-38-2, Phosphoric acid, uses 7664-39-3, **Hydrofluoric acid**, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7727-21-1, Potassium persulfate 7790-21-8, Potassium periodate (**etching** soln.; detn. of light elements by plasma emission spectroscopy with **etching** solns.)
 REFERENCE COUNT: 5
 REFERENCE(S): (1) Astroem Ove; US 5055409 A 1991 HCA
 (2) Dow Chemical Co; GB 2043945 A 1980
 (3) Huber, B; US 4230665 A 1980 HCA
 (4) Kyocera Corp; JP 08068735 A 1996 HCA
 (5) Res Corp Technologies Inc; WO 9105241 A 1991 HCA
 L85 ANSWER 3 OF 16 HCA COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 134:186972 HCA
 TITLE: Slurry composition used in semiconductor chemical-mechanical planarization process
 INVENTOR(S): Misra, Ashutosh; Hoffman, Joe G.; Schleisman, Anthony J.

PATENT ASSIGNEE(S): l'Air Liquide, Societe Anonyme pour l'Etude et
l'Exploitation des ProcèdesGe, Fr.
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1077241	A2	20010221	EP 2000-402293	20000816
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001115147	A2	20010424	JP 2000-247451	20000817
PRIORITY APPLN. INFO.:			US 1999-149312	P 19990817
			US 2000-634852	A 20000808

AB A slurry compn. used in chem.-mech. planarization process on a semiconductor surface comprises 2-50% by wt abrasive particles such as SiO₂, a suspension medium such as water, 20-40% by wt of the aq. soln. peroxygen compd. such as H₂O₂, 4-50% by wt of the aq. soln. **etching** agent such as **hydrofluoric acid**, 2-50% by wt of the aq. soln. alkyl ammonium hydroxide such as tetra-Me ammonium fluoride and a stabilizing agent such as sodium pyrophosphate.

IT **7664-39-3, Hydrofluoric acid**, uses
(**etching** agent; slurry compn. used in semiconductor chem.-mech. planarization process)

RN 7664-39-3 HCA

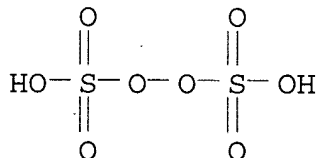
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7727-54-0, Ammonium persulfate**
(slurry compn. used in semiconductor chem.-mech. planarization process)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)

0 2 NH₃

IC ICM C09G001-02
ICS H01L021-3105
CC 76-2 (Electric Phenomena)
ST semiconductor planarization **hydrofluoric acid**
IT **7664-39-3, Hydrofluoric acid**, uses
(**etching** agent; slurry compn. used in semiconductor
chem.-mech. planarization process)
IT 75-59-2, Tetramethyl ammonium hydroxide 373-68-2, Tetramethyl
ammonium fluoride 1341-49-7, Ammonium bifluoride 7722-84-1,
Hydrogen peroxide, uses **7727-54-0**, Ammonium persulfate
10028-15-6, Ozone, uses 12125-01-8, Ammonium fluoride
(slurry compn. used in semiconductor chem.-mech. planarization
process)

L85 ANSWER 9 OF 16 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 111:31957 HCA

TITLE: Selective photoetching of n-gallium
arsenide/zinc selenide heterostructures

AUTHOR(S): Van de Ven, Johan

CORPORATE SOURCE: Philips Res. Lab., Eindhoven, 5600JA, Neth.

SOURCE: Mater. Lett. (1989), 7(12), 468-72

CODEN: MLETDJ; ISSN: 0167-577X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB It is shown that by relatively simple photochem. **etching**
methods GaAs can be selectively **etched** from n-GaAs/ZnSe
structures. The light used for this purpose should have a photon
energy between the band gaps of the 2 materials. Several
photoetchants for GaAs, some new and others well-known from the
literature, are discussed.

IT **7664-39-3, Hydrofluoric acid**, reactions
7775-27-1

(**etching** with soln. of, selective, of gallium arsenide
in semiconductor structure contg. zinc selenide)

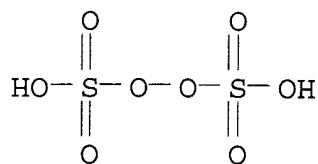
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
(CA INDEX NAME)



0 2 Na

- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 74
- ST gallium arsenide zinc selenide structure; photochem selective **etching** arsenide; photon band gap photoetching
- IT Semiconductor devices
(gallium arsenide-zinc selenide, photochem. selective **etching** of gallium arsenide in)
- IT **Etching**
(photochem., selective, of gallium arsenide, in structure with zinc selenide)
- IT 1333-82-0, Chromium trioxide 7647-01-0, **Hydrochloric acid**, properties 7664-39-3, **Hydrofluoric acid**, reactions 7664-93-9, Sulfuric acid, reactions 7681-52-9 7722-84-1, Hydrogen peroxide, uses and miscellaneous 7726-95-6, Bromine, reactions 7758-02-3, Potassium bromide, reactions 7775-27-1 10035-10-6, Hydrobromic acid, reactions
(**etching** with soln. of, selective, of gallium arsenide in semiconductor structure contg. zinc selenide)
- IT 1310-73-2, Sodium hydroxide, reactions
(**etching** with soln. of, selective, of gallium arsenide in semiconductor structure contg. zinc selenide)
- IT 1303-00-0, Gallium arsenide (GaAs), reactions
(selective **etching** of, photochem., in semiconductor structure with zinc selenide)
- IT 1315-09-9, Zinc selenide
(semiconductor structure contg. gallium arsenide and, photochem. selective **etching** for)

L85 ANSWER 10 OF 16 HCA COPYRIGHT 2001 ACS
ACCESSION NUMBER: 102:212734 HCA
TITLE: Aluminum surface preparation
INVENTOR(S): Walls, John E.
PATENT ASSIGNEE(S): American Hoechst Corp., USA
SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

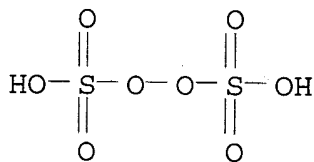
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4502925	A	19850305	US 1984-619105	19840611
EP 167751	A1	19860115	EP 1985-105850	19850513
EP 167751	B1	19900718		
R: CH, DE, FR, GB, LI, NL, SE				
AU 8542806	A1	19851219	AU 1985-42806	19850523
AU 584899	B2	19890608		
CA 1235380	A1	19880419	CA 1985-482400	19850527
BR 8502751	A	19860212	BR 1985-2751	19850610
JP 61010491	A2	19860117	JP 1985-125265	19850611
PRIORITY APPLN. INFO.:			US 1984-619105	19840611

AB A prepn. is described of an Al support for lithog. printing plates fabrication. The support having an increased surface area and improved capillary wettability is prepd. by **etching** in an aq. bath contg. HNO₃ and/or HCl .ltoreq.25 and an inorg. F-contg. acid or a salt 1-25%, electrochem. grained and anodized. Thus, a 1100 Al alloy degreased in an alk. soln. was immersed in a compn. contg. (100%) HNO₃ 100, NH₄F 100 g/L for 60 s at 60.degree., rinsed, dried to provide a highly textured surface contg. uniformly distributed nodules 10.mu. in diam., 8-10.mu. in height and 40-50.mu. from peak-to-peak. The support was then anodized using d.c. electricity and an electrolyte contg. 150 g/L of H₂SO₄, hydrophilized by treating with a 2.2 g/L soln. of poly(vinylphosphonic acid) at 65.5.degree. for 30 s, rinsed, dried, coated with a photosensitive compn. contg. poly(vinyl formal-vinyl alc.-vinyl acetate), H₃PO₄, phthalocyanine, and a condensation product of 3-methoxy-4-diazodiphenylamine sulfate and 4,4'-bismethoxymethyldiphenyl ether, imagewise exposed and developed. The obtained printing provided 50,000 acceptable copies.

IT 7727-21-1 7727-54-0 7775-27-1
(electrochem. graining electrolyte contg., in treatment of aluminum support for lithog.)

RN 7727-21-1 HCA

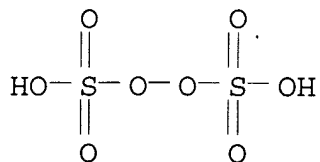
CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), dipotassium salt (9CI) (CA INDEX NAME)



0 2 K

RN 7727-54-0 HCA

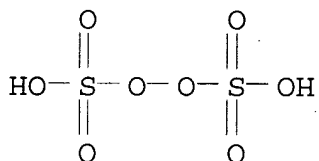
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH_3

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

IT 7664-39-3, uses and miscellaneous
(**etching** soln. contg. nitric and/or
hydrochloric acid and, for surface prepn. of
aluminum plate, for lithog.)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM C25F003-04

ICS C25D011-16; C25D011-18

NCL 204033000

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

Section cross-reference(s): 72

ST aluminum support **etching** lithog plate

IT Lithographic plates

(aluminum surface prepn. for support for, **etching** in,
in aq. soln. contg. nitric **acid** and/or
hydrochloric acid and inorg. fluorine-contg.)

- acid or salt)
- IT 144-62-7, uses and miscellaneous 7446-70-0, uses and miscellaneous
 7722-84-1, uses and miscellaneous **7727-21-1**
7727-54-0 7775-27-1 10043-35-3, uses and
 miscellaneous 13473-90-0 15092-81-6 18697-38-6
 (electrochem. graining electrolyte contg., in treatment of
 aluminum support for lithog.)
- IT 7647-01-0, uses and miscellaneous 7697-37-2, uses and
 miscellaneous
 (**etching** soln. contg. inorg. fluorine-contg. acid and,
 for surface prepn. of aluminum plate, for lithog.)
- IT 1341-49-7 **7664-39-3**, uses and miscellaneous 12125-01-8
 16872-11-0 16919-27-0 16923-95-8 16940-81-1 16961-83-4
 (**etching** soln. contg. nitric and/or
hydrochloric acid and, for surface prepn. of
 aluminum plate, for lithog.)
- IT 7429-90-5, uses and miscellaneous
 (support for lithog. printing plates from, **etching**
 solns. for prepn. of surface of)

L85 ANSWER 15 OF 16 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 82:33949 HCA
 TITLE: **Engraving** a sheet of stainless steel
 INVENTOR(S): Berenguer, Jose A. de M.
 PATENT ASSIGNEE(S): Kelco, S. A.
 SOURCE: Span., 10 pp.
 CODEN: SPXXAD
 DOCUMENT TYPE: Patent
 LANGUAGE: Spanish
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

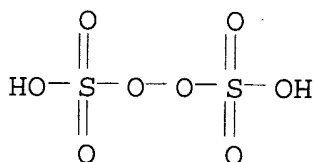
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
ES 389001	A1	19740301	ES 1971-389001	19710306
AB	The process is applicable to 18/8 stainless steel sheets, incorporating e.g., Al or Zn in the engraved areas, and providing protection for photog.-image application. An antacid paste is removed by CCl ₄ or other solvent. The treatment, in a soln. of FeCl ₃ 25-100 made up with HNO ₃ 15-25, and distd. H ₂ O 25-30 wt.% at 30-90.degree. for 15-45 min., with brightening by equal wts. of HF , HNO ₃ , HCl , and distd. H ₂ O at 40-50.degree. for 5-10 min, is followed by retoning with H ₂ SO ₄ , (NH) ₂ S ₂ O ₈ , and H ₂ CrO ₄ .			
IT	7664-39-3 , reactions (engraving of stainless steel in solutions contg.)			
RN	7664-39-3 HCA			
CN	Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)			

HF

IT 7727-54-0

(toning solutions contg., for stainless steel after **engraving**)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)• 2 NH₃

IC C23F

CC 55-6 (Ferrous Metals and Alloys)

ST stainless steel **engraving**; photog image stainless steelIT **Engraving**

(of stainless steel, solutions for)

IT 7647-01-0, reactions **7664-39-3**, reactions 7697-37-2,
reactions 7705-08-0, reactions**(engraving of stainless steel in solutions contg.)**

IT 12671-80-6

(engraving of, acid solns. for)IT 7664-93-9, uses and miscellaneous **7727-54-0** 7738-94-5(toning solutions contg., for stainless steel after **engraving**)

=> d l102 1-2 ibib abs hitstr hitind

L102 ANSWER 1 OF 2 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 134:335160 HCA

TITLE: Chemical-mechanical **planarization** of
copperINVENTOR(S): Brusic, Vlasta; Edelstein, Daniel C.; Fenney,
Paul M.; Guthrie, William; Jaso, Mark; Kaufman,
Frank B.; Lustig, Naftali; Roper, Peter;
Rodbell, Kenneth; Thompson, David B.

PATENT ASSIGNEE(S): International Business Machines Corporation, USA

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

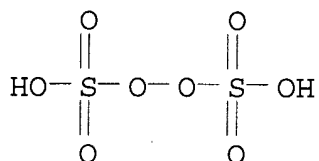
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

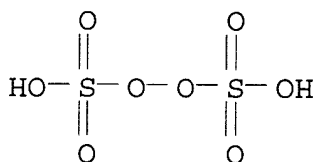
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1096556	A1	20010502	EP 1999-307999	19991011
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CN 1294168	A	20010509	CN 1999-121580	19991020
PRIORITY APPLN. INFO.:			EP 1999-307999	A 19991011
AB	Cu or a Cu alloy is removed by chem.-mech. planarization (CMP) in a slurry of an oxidizer, an oxidn. inhibitor, and an additive that appreciably regulates Cu complexing with the oxidn. inhibitor.			
IT	7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate (chem.-mech. planarization of copper)			
RN	7727-21-1 HCA			
CN	Peroxydisulfuric acid ($[(HO)S(O)_2]_2O_2$), dipotassium salt (9CI) (CA INDEX NAME)			



• 2 K

RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ($[(HO)S(O)_2]_2O_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

IC ICM H01L021-321
 ICS C09G001-00; C09K013-00; B24B037-00
 CC 76-2 (Electric Phenomena)
 IT Antioxidants
 Complexing agents

Oxidizing agents
Slurries
(chem.-mech. **planarization** of copper)
IT Polishing
(chem.-mech.; chem.-mech. **planarization** of copper)
IT Alcohols, processes
(fatty, sodium salts; chem.-mech. **planarization** of copper)
IT Polishing materials
(pads; chem.-mech. **planarization** of copper)
IT Copper alloy, base
(chem.-mech. **planarization** of copper)
IT 51-17-2, Benzimidazole 94-97-3, 5-Chlorobenzotriazole 95-14-7, 1H-Benzotriazole 136-85-6, 5-Methylbenzotriazole 142-31-4, Sodium octyl sulfate 555-36-2, Iron(III) stearate 615-15-6 615-16-7, 2-Hydroxybenzimidazole 1336-21-6, Ammonium hydroxide 1344-28-1, Alumina, processes 2592-95-2, 1-Hydroxybenzotriazole 5324-84-5, Sodium octyl sulfonate 7440-50-8, Copper, processes 7647-01-0, **Hydrogen chloride**, processes 7664-93-9, Sulfuric acid, processes 7705-08-0, Ferric **chloride**, processes 7722-84-1, Hydrogen peroxide, processes 7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate 7738-94-5, Chromic acid (H₂CrO₄) 7758-05-6, Potassium iodate 7778-50-9, Potassium bichromate 10421-48-4, Ferric nitrate 11129-60-5, Manganese oxide 13351-73-0, 1-Methylbenzotriazole 89699-60-5, Duponol SP 336874-12-5, Duponol WN
(chem.-mech. **planarization** of copper)

REFERENCE COUNT: 5

REFERENCE(S):

- (1) Cabot Corp; EP 0846742 A 1998 HCA
- (2) Carpio, R; THIN SOLID FILMS 1995, V266(2), P238 HCA
- (3) Gomez, J; US 5897375 A 1999
- (4) Tokyo Shibaura Electric Co; EP 0747939 A 1996 HCA
- (5) Wood, T; WO 9849723 A 1998 HCA

L102 ANSWER 2 OF 2 HCA COPYRIGHT 2001 ACS

ACCESSION NUMBER: 111:31957 HCA

TITLE: Selective **photoetching** of n-gallium arsenide/zinc selenide heterostructures

AUTHOR(S): Van de Ven, Johan

CORPORATE SOURCE: Philips Res. Lab., Eindhoven, 5600JA, Neth.

SOURCE: Mater. Lett. (1989), 7(12), 468-72

CODEN: MLETDJ; ISSN: 0167-577X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB It is shown that by relatively simple photochem. etching methods GaAs can be selectively etched from n-GaAs/ZnSe structures. The light used for this purpose should have a photon energy between the band gaps of the 2 materials. Several **photoetchants** for GaAs, some new and others well-known from the literature, are

discussed.
 IT 7664-39-3, **Hydrofluoric acid**, reactions
 7775-27-1
 (etching with soln. of, selective, of gallium arsenide in
 semiconductor structure contg. zinc selenide)

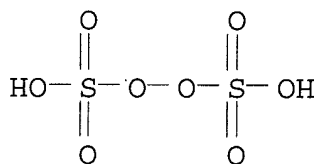
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



0 2 Na

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

ST gallium arsenide zinc selenide structure; photochem selective
 etching arsenide; photon band gap **photoetching**

IT 1333-82-0, Chromium trioxide 7647-01-0, Hydrochloric acid,
 properties 7664-39-3, **Hydrofluoric acid**
 , reactions 7664-93-9, Sulfuric acid, reactions 7681-52-9
 7722-84-1, Hydrogen peroxide, uses and miscellaneous 7726-95-6,
 Bromine, reactions 7758-02-3, Potassium bromide, reactions
 7775-27-1 10035-10-6, Hydrobromic acid, reactions
 (etching with soln. of, selective, of gallium arsenide in
 semiconductor structure contg. zinc selenide)

=> d l81 1-27 cbib abs hitstr hitind

L81 ANSWER 1 OF 27 HCA COPYRIGHT 2001 ACS

135:161118 Semiconductor device and method of manufacturing with minimization of the step between the upper surface of the wiring and the upper surface of the dielectric film. Toyoda, Hiroshi; Matsuda, Tetsuo; Kaneko, Hisashi; Hirabayashi, Hideaki (Kabushiki Kaisha Toshiba, Japan). U.S. Pat. Appl. Publ. US 20010013617 A1 20010816, 25 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-767724 20010124. PRIORITY: JP 2000-16189 20000125; JP 2000-89289 20000328.

AB A method of manufg. a semiconductor device, which comprises the steps of forming an intermediate layer on an insulating layer, forming a groove in the intermediate layer and the insulating layer, forming a 1st barrier layer on the intermediate layer, depositing a wiring layer on the 1st barrier layer to thereby fill the groove with the wiring layer, performing a flattening treatment of the wiring layer, removing a surface portion of the wiring to thereby permit the surface of the wiring to be recessed lower than a surface of the insulating layer, thus forming a recessed portion, forming a 2nd barrier layer on the intermediate layer and on an inner wall of the recessed portion, performing a flattening treatment of the 2nd barrier layer, thereby, and selectively removing the intermediate layer, exposing the insulating layer.

IT **7440-50-8P, Copper**, processes
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **7664-39-3, Hydrofluoric acid**, uses
7727-54-0, Ammonium peroxydisulfate
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)

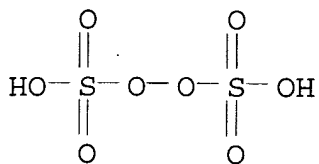
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



2 NH₃

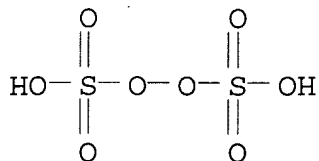
- IC ICM H01L027-108
ICS H01L029-76; H01L021-44; H01L021-4763
NCL 257301000
CC 76-3 (Electric Phenomena)
IT Sputtering
(**etching**, reactive; semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- IT Annealing
Coating process
Dielectric films
Diffusion barrier
Electrodeposition
Etching
Semiconductor device fabrication
Semiconductor devices
Sputtering
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- IT **Etching**
(sputter, reactive; semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- IT **Copper** alloy, base
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- IT 7440-06-4, Platinum, processes 7440-21-3, Silicon, processes 7631-86-9, Silicon dioxide, processes 12033-89-5, Silicon nitride, processes 25583-20-4, **Titanium** nitride (TiN)
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- IT 7440-16-6P, Rhodium, processes 7440-18-8P, Ruthenium, processes **7440-50-8P, Copper**, processes 12033-62-4P, Tantalum nitride (TaN)
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)

- film)
- IT 56-40-6, Glycine, uses 60-00-4, uses 107-15-3, Ethylenediamine, uses 5329-14-6, Aminosulfonic acid 7647-01-0, **Hydrochloric acid**, uses 7664-39-3, **Hydrofluoric acid**, uses 7722-84-1, Hydrogen peroxide, uses 7727-54-0, Ammonium **peroxydisulfate** 7732-18-5, Water, uses 7758-98-7, **Copper** sulfate, uses 10028-15-6, Ozone, uses 10489-46-0, Rhodium sulfate 12648-62-3, Ruthenium chloride
(semiconductor device and method of manufg. with minimization of step between upper surface of wiring and upper surface of dielec. film)
- L81 ANSWER 2 OF 27 HCA COPYRIGHT 2001 ACS
- 135:67741 Procedure and device for the production or recovery of **peroxodisulfates**. Thiele, Wolfgang (Eilenburger Elektrolyse- Und Umwelttechnik G.m.b.H., Germany). Ger. Offen. DE 19962672 A1 20010628, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19962672 19991223.
- AB The process was carried out in two-part electrolytic cell with a separator, the **peroxodisulfates** were generated or regenerated on the anode. A detailed description of the cell with the porous membrane is provided. The catholyte was enriched by adding in sulfuric acid and/or other **etching** acid and transferred to the anolyte. The electrode materials and conditions of the electrolysis (electrolyte compn. and concn., pH, and membrane type) are described. The yield of the **peroxodisulfates** formation are discussed.
- IT 7440-32-6, **Titanium**, uses 7440-50-8, **Copper**, uses 7664-39-3, **Hydrofluoric acid**, uses
(procedure and device for prodn. or recovery of **peroxodisulfates**)
- RN 7440-32-6 HCA
CN Titanium (8CI, 9CI) (CA INDEX NAME)
- Ti
- RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)
- Cu
- RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)
- HF
- IT 7775-27-1P, Disodium **peroxodisulfate**

(procedure and device for prodn. or recovery of
peroxodisulfates)

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

IC ICM C25B001-28

CC 72-4 (Electrochemistry)

Section cross-reference(s): 49, 78

ST procedure device recovery formation **peroxodisulfate**

IT Oxidation, electrochemical

(procedure and device for prodn. or recovery of
peroxodisulfates)

IT 540-72-7, Sodium thiocyanate 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses 7440-50-8, Copper, uses 7664-39-3, Hydrofluoric acid, uses 7664-93-9, Sulfuric acid, uses 7720-78-7, Iron sulfate feso4 7757-82-6, Sodium sulfate, uses 7758-98-7, Copper sulfate, uses 7782-40-3, Diamond, uses 7782-42-5, Graphite, uses 7786-81-4, Nickel sulfate 9002-86-2, Polyvinyl chloride 12597-68-1, Stainless steel, uses 102819-89-6, Neosepta ACS 156259-81-3, Neosepta AMH 200960-84-5, Nafion 450

(procedure and device for prodn. or recovery of
peroxodisulfates)

IT 10028-22-5, Iron(3+) sulfate

(procedure and device for prodn. or recovery of
peroxodisulfates)

IT 7775-27-1P, Disodium **peroxodisulfate**

15092-81-6P, **Peroxodisulfate**

(procedure and device for prodn. or recovery of
peroxodisulfates)

L81 ANSWER 3 OF 27 HCA COPYRIGHT 2001 ACS

135:67733 Electrochemical regeneration of **etching** solution

based on ammonium persulfate. Kruglikov, S. S.; Turaev, D. Yu. (Mendeleev University of Chemical Technology of Russia, Moscow, Russia). Gal'vanotekh. Obrab. Poverkh., 8(3), 50-56 (Russian) 2000. CODEN: GOPOEF. ISSN: 0869-5326. Publisher: Rossiiskii

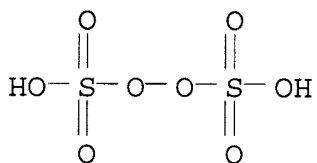
Khimiko-Tekhnologicheskii Universitet im. D. I. Mendeleeva.

AB Regeneration process of **copper**-contg. solns. based on ammonium persulfate and used in the manuf. of printed circuit boards has been studied. Spent soln. contg. up to 10 g/l Cu²⁺ is placed into the intermediate chamber of a three-chamber cell with one cationic and one anionic membranes. In the course of the process Cu²⁺, H⁺ and NH₄⁺-ions migrate into the cathodic chamber, where **copper** is deposited on the cathode, and the mixt. of hydrogen and ammonia is evolved into a gaseous phase. This mixt. is then led into the anolyte, which contains sulfuric acid and ammonium sulfate. Formation of oxygen and persulfate takes place at a platinum anode.

IT 7727-54-0P, Ammonium persulfate
(electrochem. regeneration of **etching** soln. based on)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT 7440-32-6, **Titanium**, uses
(electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrodes from)

RN 7440-32-6 HCA

CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 7440-50-8P, **Copper**, processes
(electrodeposition in process of electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

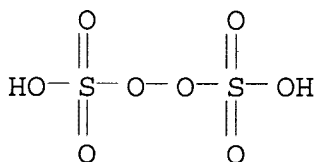
CC 72-8 (Electrochemistry)

Section cross-reference(s): 56

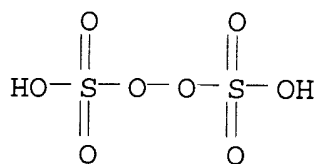
ST electrochem regeneration **copper etching** soln

- ammonium persulfate
- IT Anion exchange membranes
- Cation exchange membranes
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in electrolytic cell with)
- IT Printed circuit boards
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate used in prodn. of)
- IT **Etching**
 - (**etchants**; electrochem. regeneration of **etching** soln. based on ammonium persulfate)
- IT Electrolytic cells
 - (membrane; electrochem. regeneration of **etching** soln. based on ammonium persulfate in)
- IT Electrodeposition
 - (of **copper** in process of electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell)
- IT Current efficiency
 - (of electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrode from **Ti** and **Pt**)
- IT Oxidation, electrochemical
 - (of sulfate ion in process of electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell)
- IT 7727-54-0P, Ammonium persulfate
 - (electrochem. regeneration of **etching** soln. based on)
- IT 15158-11-9P, **Copper** 2+, processes
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate contg.)
- IT 7783-20-2, Ammonium sulfate, reactions
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with anolyte contg.)
- IT 7440-06-4, Platinum, uses
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrode from)
- IT 7440-32-6, **Titanium**, uses
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrodes from)
- IT 1336-21-6, Ammonium hydroxide
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrolyte contg.)
- IT 7664-93-9, Sulfuric acid, reactions 7758-98-7, **Copper** sulfate, reactions
 - (electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell with electrolyte in intermediate chamber contg.)
- IT 7440-50-8P, **Copper**, processes
 - (electrodeposition in process of electrochem. regeneration of **etching** soln. based on ammonium persulfate in membrane cell)

- IT 1333-74-0P, Hydrogen, processes 7664-41-7P, Ammonia, processes
7782-44-7P, Oxygen, processes
(formation in process of electrochem. regeneration of
etching soln. based on ammonium persulfate in membrane
cell)
- L81 ANSWER 4 OF 27 HCA COPYRIGHT 2001 ACS
134:319609 Chemical mechanical polishing (CMP) slurry, method and tool
for polishing metalized integrated circuit. BrajiK, Brasta;
Edelstein, Daniel C.; Fenney, Paul M.; Guthrie, William; Jaso, Mark;
Kaufman, Frank B.; Naphtali, E. Lastig; Roper, Peter D.; Rodbell,
Kenneth P.; Thompson, David B. (International Business Machines
Corp., USA). Jpn. Kokai Tokkyo Koho JP 2001118813 A2 20010427, 10
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-300890
19991022.
- AB The CMP slurry, for polishing Cu or **Cu** alloy
layers, comprises an **etchant**, an oxidn. inhibitor,
and an additive for controlling complexation of Cu with the
inhibitor. The Cu or **Cu** alloy **layers** are
polished with a CMP tool contg. a wafer carrier and a pad by
following steps; setting a wafer having a Cu surface on the carrier;
coating the pad with a slurry contg. an **etchant**, an oxidn.
inhibitor, and a fatty acid sulfonic acid-type surfactant having
mol. wt. .ltoreq.350; and then polishing the **Cu**
layers with the pad. The title tool, used for polishing Cu
or **Cu** alloy **layers** on a barrier layer formed on
a work piece, is equipped with a wafer carrier and a polishing pad,
and uses a slurry for removing (1) the Cu or **Cu** alloy
layers with the first removing rate (S1) and (2) the barrier
layer with the second removing rate (S2), where S1 is 50 times
higher than S2. The method provides high-speed polishing of the
Cu layers by preventing corrosion.
- IT 7727-21-1, Potassium persulfate 7727-54-0,
Ammonium persulfate
(**etchant**; CMP slurry for polishing copper metalized
integrated circuit with wafer carrier and pad)
- RN 7727-21-1 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dipotassium salt (9CI) (CA
INDEX NAME)



RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(HO)S(O)_2]_2O_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)• 2 NH₃

IC ICM H01L021-304

ICS H01L021-304; C09K003-14; C09K013-00; C09K013-02; C09K013-04;
C09K013-06

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 57

ST chem mech polishing slurry **etchant** oxidn inhibitorsurfactant; copper metalized integrated circuit polishing CMP slurry
IT **Etching**(etchants; CMP slurry for polishing copper metalized
integrated circuit with wafer carrier and pad)

IT 555-36-2, Ferric stearate 1336-21-6, Ammonium hydroxide

7647-01-0, **Hydrochloric acid**, uses 7664-93-9,

Sulfuric acid, uses 7705-08-0, Ferric chloride, uses 7722-84-1,

Hydrogen peroxide, uses 7727-21-1, Potassium persulfate

7727-54-0, Ammonium persulfate 7738-94-5, Chromic acid

(H₂CrO₄) 7758-05-6, Potassium iodate 7778-50-9, Potassiumdichromate 10421-48-4, Ferric nitrate 11129-60-5, Manganese
oxide(etchant; CMP slurry for polishing copper metalized
integrated circuit with wafer carrier and pad)

L81 ANSWER 5 OF 27 HCA COPYRIGHT 2001 ACS

134:104368 Method and device for treatment of spent **etching**

liquor. Ozaki, Yoshikata (Daiwa Denki Kogyo K. K., Japan). Jpn.

Kokai Tokkyo Koho JP 2001020085 A2 20010123, 5 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1999-189814 19990705.

AB A spent **etching** liquor contg. NH₄ persulfate, H₂SO₄, and**Cu** is electrolyzed at c.d. 1.5-5.0 A/dm² and.ltoreq.34.degree. using a Pt group metal-plated **Ti**material as anode and **Cu** pptd. at the cathode isrecovered. Optionally, the spent **etching** liquor is

pretreated by adding Fe powder at 0.1-0.3 g/L of the spent

etching liquor, reacting under stirring for 40 min, adding

an alkali to adjust the pH 1.7-2.4 at 35-45.degree. and reducing

with a reducing agent to give the pH 0.7-1.5 at 20-35.degree.. The
device is also claimed.

IT 7440-32-6, **Titanium**, uses
 (anode; treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)

RN 7440-32-6 HCA

CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IT 7440-50-8P, **Copper**, preparation
 (treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)

RN 7440-50-8 HCA

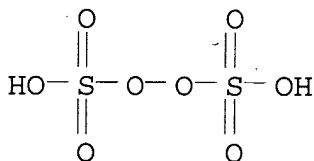
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7727-54-0, Ammonium persulfate
 (treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

IC ICM C23F001-46

ICS C02F001-461; H01M002-36

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 54, 60

ST spent **etchant** electrolysis **copper** recovery

IT Electrolysis

Etching

(treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)

IT 7440-32-6, **Titanium**, uses

(anode; treatment of spent **etchants** contg. ammonium

- persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)
- IT 7439-89-6, Iron, uses
(pretreatment with; treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)
- IT 7440-50-8P, **Copper**, preparation
(treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)
- IT 7664-93-9, Sulfuric acid, uses 7727-54-0, Ammonium persulfate
(treatment of spent **etchants** contg. ammonium persulfate and sulfuric acid and **copper** by electrolysis for **copper** recovery)
- L81 ANSWER 6 OF 27 HCA COPYRIGHT 2001 ACS
- 132:72235 Manufacturing process for semiconductor devices, **etchant** compositions and examples of the fabrication of such devices.. Kwag, Gyu-Hwan; Ko, Se-Jong; Hwang, Kyung-Seuk; Gil, Jun-Ing; Park, Sang-O.; Kim, Dae-Hoon; Chun, Sang-Moon; Jung, Ho-Gyun (Samsung Electronics Co. Ltd., Suwon, S. Korea). Ger. Offen. DE 19928570 A1 19991230, 28 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19928570 19990622. PRIORITY: KR 1998-24232 19980625; KR 1998-31544 19980803.
- AB A method is described for the prodn. of semiconductor devices, comprising the formation of conducting junctions restricting the no. of steps normally required for the prodn. of intermediate layers. A mixt., which can be used as an **etchant** in this prodn. method, is also introduced. The prodn. methods for semiconductor devices involve steps to produce a an insulating layer on the semiconductor substrate, making contact holes in the insulating layer, prodn. of a conducting layer on the insulating layer, to bury the contact holes, rotating the semiconductor substrate and the **etching** of the conducting layer applying the **etchant** while the substrate is rotating, and the rotating **etching** of a tungsten layer upon the application of an **etchant** in such a way that the conducting layer remains in the contact holes but does not remain on over the insulating layer. The compn. of the **etchant** is such that it contains at least an oxidizing agent which is selected from H₂O₂, O₂, IO₄⁻, BrO₃, ClO₃, S₂O₈⁻, KIO₃, H₅IO₆, KOH and HNO₃ and at least one activator selected form the list HF, NH₄OH, H₃PO₄, H₂SO₄, NH₄F and HCl and a buffer soln., all these chems. are mixed in pre-detd. ratios.
- IT 7440-32-6, **Titanium**, processes 7440-50-8
, **Copper**, processes
(manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
- RN 7440-32-6 HCA
- CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

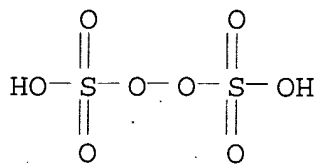
Cu

IT 7664-39-3, **Hydrogen fluoride**, processes
(manufg. process for semiconductor devices, **etchant**
comps. and examples of the fabrication of such devices)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM H01L021-321
ICS H01L021-28; H01L021-768
CC 76-3 (Electric Phenomena)
ST manuf semiconductor device **etchant** compn junction contact
hole insulator; oxidizing agent activator buffer soln
etchant semiconductor device fabrication
IT Vapor deposition process
(chem.; manufg. process for semiconductor devices,
etchant comps. and examples of fabrication of such
devices)
IT Sputtering
(manufg. process for semiconductor devices, **etchant**
comps. and examples of fabrication of such devices)
IT Borophosphosilicate glasses
Nitrites
Oxides (inorganic), processes
(manufg. process for semiconductor devices, **etchant**
comps. and examples of fabrication of such devices)
IT Buffers
Contact holes
Electric conductors
Electric insulators
Etching
Oxidizing agents
Semiconductor device fabrication
Semiconductor junctions
(manufg. process for semiconductor devices, **etchant**
comps. and examples of the fabrication of such devices)
IT Phosphates, processes
(silico-; manufg. process for semiconductor devices,
etchant comps. and examples of fabrication of such
devices)
IT 78-10-4, TEOS

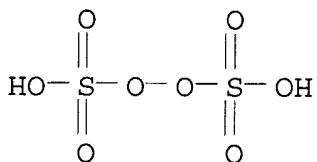
- (manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
- IT 7440-25-7, Tantalum, processes **7440-32-6, Titanium**, processes 7440-33-7, Tungsten, processes **7440-50-8, Copper**, processes 12033-62-4, Tantalum nitride 25583-20-4, **Titanium** nitride
- (manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
- IT 1310-58-3, Potassium hydroxide, processes 1336-21-6, Ammonium hydroxide ((NH₄)(OH)) 7647-01-0, **Hydrogen chloride**, processes 7664-38-2, Phosphoric acid, processes **7664-39-3, Hydrogen fluoride**, processes 7664-93-9, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7758-05-6 7782-44-7, Oxygen, processes 10450-60-9, Periodic acid (H₅IO₆) 12125-01-8, Ammonium fluoride (NH₄F) 14866-68-3, Chlorate 15056-35-6, Periodate (IO₄I-) 15092-81-6, **Peroxydisulfate** (S₂O₈2-) 15541-45-4, Bromate
- (manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
- IT 7631-86-9, Silica, processes (oxide layer; manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
- IT 7440-21-3, Silicon, processes (poly-; manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
- L81 ANSWER 7 OF 27 HCA COPYRIGHT 2001 ACS
- 131:137832 Wiring of integrated circuit.. Uzoh, Cyprian Emeka (International Business Machines Corp., USA). Jpn. Kokai Tokkyo Koho JP 11204531 A2 19990730 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-298412 19981020. PRIORITY: US 1997-968189 19971112.
- AB The title method involves sputter depositing Cu on a semiconductor substrate to form a **Cu** seed **layer**, forming a photoresist pattern on the seed layer, electroplating or electroless plating a metal on the seed layer exposed by the pattern, removing the photoresist pattern, and selectively **etching** the seed layer over the plated metal. Specifically, the **etchant** used may contain a persulfate.
- IT **7727-21-1**, Potassium persulfate **7727-54-0**, Ammonium persulfate **15593-29-0**, Sodium persulfate (**etchant** for copper seed in forming wiring of integrated circuit)
- RN 7727-21-1 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), dipotassium salt (9CI) (CA INDEX NAME)



• 2 K

RN 7727-54-0 HCA

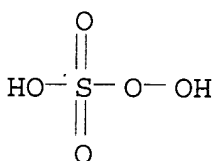
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

RN 15593-29-0 HCA

CN Peroxymonosulfuric acid, disodium salt (8CI, 9CI) (CA INDEX NAME)



• 2 Na

IC ICM H01L021-3205

ICS H01L021-288; H01L021-3065

CC 76-3 (Electric Phenomena)

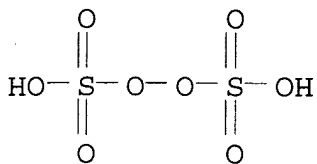
ST wiring integrated circuit copper seed **etching**; electroless
plating copper seed wiring integrated circuit; electroplating copper
seed wiring integrated circuit

IT **Etching**

(selective; of **copper** seed **layer** in forming

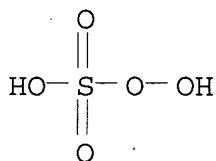
- wiring of integrated circuits)
- IT 78-83-1, Isobutyl alcohol, uses 7646-93-7, Potassium hydrogensulfate 7647-01-0, **Hydrogen chloride**, uses 7681-38-1, Sodium hydrogensulfate 7722-84-1, Hydrogen peroxide, uses 7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate 15593-29-0, Sodium persulfate 65256-24-8, Alkanol ACN (etchant for copper seed in forming wiring of integrated circuit)
- IT 7440-50-8, **Copper**, processes (seed layer in forming wiring of integrated circuits)
- L81 ANSWER 8 OF 27 HCA COPYRIGHT 2001 ACS
- 130:260620 Planarization of semiconductor substrates and an aqueous **etching** solution for it. Kruwinus, Hans-Jurgen; Sellmer, Reinhard (SEZ Semiconductor-Equipment Zubehor Fur Die Halbleiterfertigung Ag, Austria). Eur. Pat. Appl. EP 905754 A2 19990331, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 1998-115931 19980824. PRIORITY: AT 1997-1658 19970930.
- AB To remove a layer from a substrate having trenches or contact holes such that the layer remains only in the trenches or contact holes, an **etchant** is supplied as a continuous stream at a flow rate of .gtoreq.0.4 L/min, so that the **etchant** covers the whole surface of the substrate. A differential **etching** rate occurs; the **etching** rate in the areas between the trenches or contact holes is higher than that in the regions of the trenches themselves, so the layer on the surface of the substrate is **etched** away faster than that in the trenches.
- IT 7664-39-3, **Hydrogen fluoride**, processes (etching by; planarization of semiconductor substrates with aq. **etching** solns. contg.)
- RN 7664-39-3 HCA
- CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)
- HF
- IT 7440-50-8, **Copper**, processes (planarization of semiconductor substrates by **etching** of)
- RN 7440-50-8 HCA
- CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)
- Cu
- IT 7727-54-0, Ammonium persulfate 15593-29-0, Sodium peroxymonosulfate (Na₂(SO₅)) (planarization of semiconductor substrates with aq. **etching** solns. contg.)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)• 2 NH₃

RN 15593-29-0 HCA

CN Peroxymonosulfuric acid, disodium salt (8CI, 9CI) (CA INDEX NAME)



• 2 Na

IC ICM H01L021-3105

ICS H01L021-321; H01L021-311; H01L021-3213

CC 76-3 (Electric Phenomena)

ST planarization semiconductor substrate aq **etching** solnIT **Etching**

Semiconductor materials

(planarization of semiconductor substrates with aq.
etching soln.)

IT Contact holes

(planarization of semiconductor substrates with aq.
etching soln. by removing layers deposited over)

IT Alcohols, processes

Glycols, processes

Organic acids

Polyoxyalkylenes, processes

(planarization of semiconductor substrates with aq.
etching solns. contg.)IT 7664-38-2, Phosphoric acid, processes 7697-37-2, Nitric acid,
processes(etching by; in planarization of semiconductor
substrates)

- IT 7647-01-0, **Hydrogen chloride**, processes
7664-39-3, **Hydrogen fluoride**, processes
(**etching** by; planarization of semiconductor substrates
with aq. **etching** solns. contg.)
- IT 7429-90-5, Aluminum, processes 7440-50-8, **Copper**
, processes 11129-80-9, Platinum silicide 12627-41-7, Tungsten
silicide 12738-91-9, **Titanium** silicide 59141-85-4,
Gold silicide
(planarization of semiconductor substrates by **etching**
of)
- IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
(planarization of semiconductor substrates by **etching**
of layers on)
- IT 56-81-5, Glycerol, processes 64-17-5, Ethanol, processes
64-19-7, Acetic acid, processes 7664-93-9, Sulfuric acid,
processes 7727-54-0, Ammonium persulfate 12033-62-4,
Tantalum nitride (TaN) 12125-01-8, Ammonium fluoride (NH₄F)
13445-49-3D, Peroxydisulfuric acid, alkali metal salts
13530-68-2D, Chromic acid, alkali metal salts 15593-29-0,
Sodium **peroxymonosulfate** (Na₂(SO₅)) 25322-68-3,
Polyethylene glycol
(planarization of semiconductor substrates with aq.
etching solns. contg.)

L81 ANSWER 9 OF 27 HCA COPYRIGHT 2001 ACS

129:138873 Experiences with **etching** reagents to show former
austenite grain boundaries in steels. Schacht, Egbert; Richter,
Johannes (Thyssen-Krupp Stahl A.-G., Duisburg, D-47161, Germany).
Prakt. Metallogr., 35(7), 384-395 (English/German) 1998. CODEN:
PMTLA5. ISSN: 0032-678X. Publisher: Carl Hanser Verlag.

AB A new process is described which has the ability to visualize former
austenite grain boundaries in ferritic steel. Best results were
obtained with a mixt. of satd. aq. picric acid, **HCl**,
xylene, and a wetting agent as **etching** reagent. The
material examd. were the microalloyed forging steel 27MnSiVS6 after
quenching from austenitizing temp. in water and the microalloyed
fine grain steel S420NDL exhibiting complete, partial or no
recrystn. The new method of **etching** was compared to other
usual methods for the detn. of austenite grain boundary
visualization.

IT 7664-39-3, **Hydrofluoric acid**, uses
7727-54-0, Ammonium persulfate
(**etchant**-contg.; experiences with **etching**
reagents for visualization of former austenite grain boundaries
in ferrite steels)

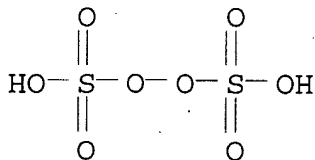
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



0 2 NH₃

- CC 55-8 (Ferrous Metals and Alloys)
- ST visualization former austenite grain boundary **etching**;
ferritic steel austenite grain visualization **etchant**
- IT Ethoxylated alcohols
(C8-18, **etchant**-contg.; experiences with
etching reagents for visualization of former austenite
grain boundaries in ferrite steels)
- IT Wetting agents
(**etchant**-contg.; experiences with **etching**
reagents for visualization of former austenite grain boundaries
in ferrite steels)
- IT **Etching**
Grain boundaries
(experiences with **etching** reagents for visualization of
former austenite grain boundaries in ferrite steels)
- IT 64-17-5, Ethanol, uses 64-19-7; Acetic acid, uses 88-89-1,
Picric acid 1308-38-9, Chromia, uses 1310-73-2, Sodium
hydroxide, uses 1330-20-7, Xylene, uses 7447-39-4,
Copper chloride, uses 7647-01-0, **Hydrochloric**
acid, uses 7664-39-3, **Hydrofluoric**
acid, uses 7697-37-2, Nitric acid, uses 7727-54-0
, Ammonium persulfate 80237-72-5, Agepon
(**etchant**-contg.; experiences with **etching**
reagents for visualization of former austenite grain boundaries
in ferrite steels)
- IT 12244-31-4, Austenite, miscellaneous
(experiences with **etching** reagents for visualization of
former austenite grain boundaries in ferrite steels)
- IT 115790-73-3, 27MnSiVS6, properties 162994-06-1, S420, properties
(experiences with **etching** reagents for visualization of
former austenite grain boundaries in ferrite steels)
- L81 ANSWER 10 OF 27 HCA COPYRIGHT 2001 ACS
- 128:148495 Redox slurries for chemical-mechanical polishing of
semiconductor wafers and related circuit boards. Small, Robert J.;
McGhee, Laurence; Maloney, David John; Peterson, Mary Louise (EKC
Technology, Inc., USA; Small, Robert J.; McGhee, Laurence; Maloney,

David John; Peterson, Mary Louise). PCT Int. Appl. WO 9804646 A1 19980205, 47 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1997-US12220 19970721. PRIORITY: US 1996-23299 19960726.

AB The slurries suitable for chem.-mech. polishing of Si semiconductor wafers contain: (a) redox compd. for selective oxidn. and redn. in the **etching** of a metal and a dielec. material; (b) optional chelating agents; (c) optional surfactants; (d) optional acids, oxidizing compds., and/or sources of H₂O₂; and (e) suitable solvents and abrasive powders. The redox compds. are preferably hydroxylamines and/or their salts, and optionally NH₄ peroxy compds. The slurry shelf life is increased by using 2-part system with the abrasive slurry and the peroxide-contg. component that are mixed for the polishing. The slurries with NH₄ **peroxydisulfate** are suitable for controlled **etching** of the Al, Cu, and/or W surfaces on electronic chips. The aq. slurry suitable for **etch** polishing of W wafers contained fine Al₂O₃ powder 5, NH₄ persulfate 10, and malonic acid 1% with the pH adjusted to 8.1 using freshly added NaOH for the W **etch** rate of 460 .ANG./min, vs. only 105-112 .ANG./min at pH of 3-6 and without malonic acid. The similar NH₄ persulfate soln. with pH of 3.1 was modified for effective **etching** of Si wafers sputtered with Ti interlayer 300 .ANG. thick and Cu top layer 3000 .ANG. thick, and was nominally .apprx.2 times more effective than acidic (pH 1.5) aq. Fe(NO₃)₃ soln.

IT 7440-50-8, **Copper**, processes
(polishing of, **etch** slurry for; redox slurries for chem.-mech. polishing of semiconductor wafers and circuit boards)

RN 7440-50-8 HCA

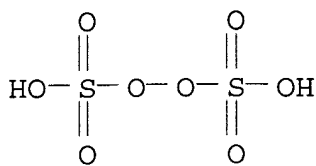
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7727-54-0, Ammonium **peroxydisulfate**
10361-76-9, Potassium **peroxymonosulfate**
(polishing slurry with; redox slurries for chem.-mech. polishing of semiconductor wafers and circuit boards)

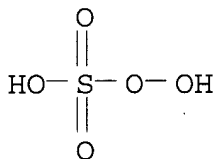
RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI) (CA INDEX NAME)



• 2 NH₃

RN 10361-76-9 HCA
CN Peroxymonosulfuric acid, dipotassium salt (8CI, 9CI) (CA INDEX NAME)



• 2 K

IC ICM C09K013-00
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 56
ST semiconductor circuit chem polishing redox slurry; tungsten
etch polishing redox persulfate slurry; elec circuit
etch polishing redox slurry
IT **Etching**
(polishing, slurry for; redox slurries for chem.-mech. polishing
of semiconductor wafers and circuit boards)
IT 7429-90-5, Aluminum, processes 7440-33-7, Tungsten, processes
7440-50-8, **Copper**, processes
(polishing of, **etch** slurry for; redox slurries for
chem.-mech. polishing of semiconductor wafers and circuit boards)
IT 77-92-9, Citric acid, uses 79-21-0, Peracetic acid 87-69-4,
Tartaric acid, uses 108-13-4, Malonamide 110-15-6, Succinic
acid, uses 124-43-6, Urea hydrogen peroxide 141-82-2, Malonic
acid, uses 144-62-7, Oxalic acid, uses 1341-49-7, Ammonium
bifluoride 7722-84-1, Hydrogen peroxide, uses 7722-86-3,
Peroxymonosulfuric acid 7727-54-0, Ammonium
peroxydisulfate 7758-05-6, Potassium iodate 7790-21-8,
Potassium periodate 7803-49-8, Hydroxylamine, uses
10361-76-9, Potassium **peroxymonosulfate**
13444-71-8, Periodic acid 13465-08-2, Hydroxylamine nitrate

15630-89-4, Sodium percarbonate 21111-84-2, Periodic acid (HIO₄), lithium salt
(polishing slurry with; redox slurries for chem.-mech. polishing of semiconductor wafers and circuit boards)

L81 ANSWER 11 OF 27 HCA COPYRIGHT 2001 ACS

124:358852 Fabrication of a magnetographic printing head. Krongelb, S.; Romankiw, L. T.; Yarmchuk, E. J.; Thompson, D. A. (IBM Res. Div., IBM T. J. Watson Res. Cent., Yorktown Heights, NY, 10598, USA). Proc. - Electrochem. Soc., 95-18(Magnetic Materials, Processes, and Devices), 529-539 (English) 1996. CODEN: PESODO. ISSN: 0161-6374.

AB A batch fabrication process is described to produce a magnetog. printing head which has an array of 3072 pairs of magnetic poles with word and bit conductors 40 .mu. wide by 25 .mu. high interspersed between the poles and appropriately interconnected. The poles were formed in an array of edge-mounted Metglas strips by traditional precision machining techniques using a slitting saw. The word and bit lines were made sep. on metalized Kapton films by electroplating through photolithog. defined resist patterns. Openings in the Kapton to allow the conductors to be slipped over the pole tip array were produced by reactive ion **etching** using a machined graphite overlay in combination with the plated conductors as the mask. The approach described here provides an example of how diverse technologies can be combined to optimize fabrication and provide a cost-effective process to build MEMS type structures.

IT 7440-32-6, Titanium, processes 7440-50-8
, Copper, processes
(fabrication of magnetog. printing head)

RN 7440-32-6 HCA

CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

RN 7440-50-8 HCA

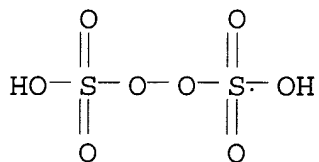
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7727-54-0, Ammonium persulfate
(fabrication of magnetog. printing head)

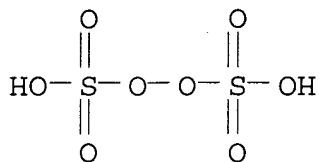
RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



2 NH₃

- CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 56, 72, 74
- IT Sputtering
(**etching**, fabrication of magnetog. printing head)
- IT **Etching**
(sputter, fabrication of magnetog. printing head)
- IT 7440-32-6, **Titanium**, processes 7440-50-8
, **Copper**, processes 7782-42-5, Graphite, processes
10043-11-5, Boron nitride, processes 25036-53-7, Kapton
63210-71-9, Vitrovac 0040
(fabrication of magnetog. printing head)
- IT 75-73-0, Carbon tetrafluoride 7727-54-0, Ammonium
persulfate
(fabrication of magnetog. printing head)
- L81 ANSWER 12 OF 27 HCA COPYRIGHT 2001 ACS
- 124:191699 Formation of thin-film multilayered wiring pattern and
manufacture of thin-film wiring board. Oyama, Katsuhiko (Tokyo
Shibaura Electric Co, Japan). Jpn. Kokai Tokkyo Koho JP 07307549 A2
19951121 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1994-97454 19940511.
- AB The formation involves the following steps: (1) forming multilayered
metal thin films of different kinds on a substrate, (2) forming a
resist mask or a prescribed pattern, (3) successively and
selectively **etching** areas of the (multilayered) metal thin
films exposed from the mask, using a corresponding **etching**
soln. to form 1st thin-film wiring pattern, and (4) **etching**
the thin-film wiring in the order reverse from those in 3, using the
corresponding **etching** soln. to adjust shape of side wall
of the wiring pattern, and (5) removing the resist mask. The formed
wiring has homogeneous thickness in the thickness direction, and the
formed wiring board has high reliability.
- IT 7727-54-0, Ammonium persulfate
(**etchant** component; patterning of thin-film
multilayered wiring by **etching** in manuf. of thin-film
wiring board)
- RN 7727-54-0 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



2 NH₃

IT 7440-32-6, Titanium, processes 7440-50-8
 , Copper, processes
 (in multilayered wiring; patterning of thin-film multilayered
 wiring by **etching** in manuf. of thin-film wiring board)

RN 7440-32-6 HCA

CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC ICM H05K003-06

ICS H01L021-306; H05K001-09

CC 76-14 (Electric Phenomena)

ST circuit board multilayered wiring patterning **etching**

IT Electric conductors

(multilayered; patterning of thin-film multilayered wiring by
etching in manuf. of thin-film wiring board)

IT **Etching**

(patterning of thin-film multilayered wiring by **etching**
 in manuf. of thin-film wiring board)

IT Electric circuits

(printed, boards, patterning of thin-film multilayered wiring by
etching in manuf. of thin-film wiring board)

IT 60-00-4, EDTA, reactions 67-56-1, Methanol, reactions 7647-01-0,
 Hydrochloric acid, reactions 7664-41-7, Ammonia, reactions
 7722-84-1, Hydrogen peroxide, reactions 7727-54-0,
 Ammonium persulfate 7758-98-7, **Copper** sulfate, reactions
 (**etchant** component; patterning of thin-film
 multilayered wiring by **etching** in manuf. of thin-film
 wiring board)

IT 7440-02-0, Nickel, processes 7440-32-6, Titanium

, processes 7440-50-8, Copper, processes

(in multilayered wiring; patterning of thin-film multilayered

wiring by **etching** in manuf. of thin-film wiring board)

L81 ANSWER 13 OF 27 HCA COPYRIGHT 2001 ACS

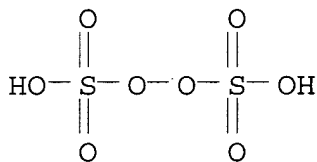
121:89357 Solution for chemically dissolving **copper** and **copper** alloys. Oota, Koji; Nakagishi, Tetsuyuki (Asahi Chemical Co, Japan). Jpn. Kokai Tokkyo Koho JP 06116756 A2 19940426 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-267564 19921006.

AB The title soln. is an aq. soln. of a complex-forming agent, an oxidizing agent, and an NH₄ salt of a mineral acid. The pH of the soln is adjusted at 5-8, esp. by NH₃. Preferably, the complex-forming agent is an aminocarboxylic acid or oxycarboxylic acid contg. .gtoreq.2 carboxyl groups in a mol., or their NH₄, Na, or K salts, the oxidizing agent is a salt of **HCl** or HClO₄, or H₂O₂, and the mineral acid is **HCl**, H₂SO₄, HNO₃, **HF**, or H₃PO₃. The soln. is used in soldering, plating, coating, or **etching**.

IT **7727-54-0**, Ammonium **peroxodisulfate**
(soln. for chem. dissolving **copper** and **copper** alloys, for soldering and plating and coating and **etching**)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT **7440-50-8**, **Copper**, miscellaneous
(soln. for chem. dissolving of, for soldering and plating and coating and **etching**)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC ICM C23F001-18

ICS C23F001-34

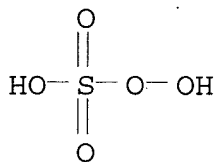
CC 56-6 (Nonferrous Metals and Alloys)

ST **copper** alloy chem dissolving soln; ammonium chloride

copper dissolving soln

IT **copper** alloy, base

- (soln. for chem. dissolving of, for soldering and plating and coating and **etching**)
- IT 141-95-7, Sodium malonate 676-46-0, Sodium malate 3164-29-2, Ammonium tartrate 5064-31-3, Sodium nitrilotriacetate 7601-90-3D, Perchloric acid, salts 7632-50-0, Ammonium citrate 7647-01-0D, **Hydrochloric acid**, salts 7722-84-1, Hydrogen peroxide, uses **7727-54-0**, Ammonium **peroxodisulfate** 7758-19-2, Sodium chlorite 7775-09-9, Sodium chlorate 7783-20-2, Ammonium sulfate, uses 10124-31-9, Ammonium phosphate 12125-01-8, Ammonium fluoride 12125-02-9, Ammonium chloride, uses 13446-48-5, Ammonium nitrite 72860-87-8 (soln. for chem. dissolving **copper** and **copper** alloys, for soldering and plating and coating and **etching**)
- IT **7440-50-8, Copper**, miscellaneous (soln. for chem. dissolving of, for soldering and plating and coating and **etching**)
- L81 ANSWER 14 OF 27 HCA COPYRIGHT 2001 ACS
121:15585 Acidic **etching** bath for **titanium** alloys. Dastolfo, Jr Leroy E.; Tarcy, Gary P.; Wehrle, William P.; Davis, Mark E. (Aluminum Co. of America, USA). U.S. US 5248386 A 19930928, 6 pp. Cont.-in-part of U.S. Ser. No. 807,725. (English). CODEN: USXXAM. APPLICATION: US 1992-848886 19920310. PRIORITY: US 1991-652587 19910208; US 1991-807725 19911216.
- AB The aq. nitrate-free bath for **etching** or milling at 16-71.degree. contains **HF** at 20-100 g/L and sol. chlorate >50 g/L with peroxysulfate .gtoreq.180 g/L or peroxide .gtoreq.10 g/L, and is suitable for the processing of **Ti** alloys or com. **Ti**. The bath optionally contains **HF** 20-100 g/L, as well as H-sorption inhibitor selected from NaClO3 55-650, (NH4)2S2O8 180-650, and/or H2O2 .gtoreq.10 g/L. The milling treatment is suitable for forged articles from **Ti**-6Al-4V, **Ti**-6Al-6V-2Sn, or **Ti**-10V-2Fe-3Al alloys.
- IT **7440-32-6, Titanium**, reactions (chem. milling of, bath with hydrofluoridc acid for, with hydrogen-sorption inhibitor)
- RN 7440-32-6 HCA
CN Titanium (8CI, 9CI) (CA INDEX NAME)
- Ti
- IT **31499-96-4** (**etching** bath contg., for **titanium** alloys, **hydrofluoric acid** in)
- RN 31499-96-4 HCA
CN Peroxymonosulfuric acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

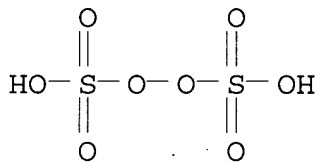


• x Na

IT 7727-21-1 7727-54-0, Ammonium peroxydisulfate
(etching bath contg., for **titanium** alloys,
hydrofluoric acid in)

RN 7727-21-1 HCA

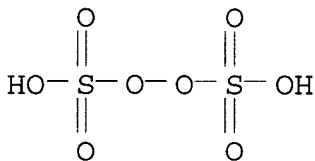
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dipotassium salt (9CI) (CA
INDEX NAME)



• 2 K

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT 7664-39-3, Hydrofluoric acid, reactions
(etching bath contg., for **titanium** alloys,
hydrogen-sorption inhibitors in)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM B44C001-22

ICS C23F001-00; C09K013-08

NCL 156659100

CC 56-6 (Nonferrous Metals and Alloys)

ST **titanium** alloy **etching hydrofluoric acid**; chlorate bath milling **titanium** alloy; persulfate bath milling **titanium** alloy; peroxide bath milling **titanium** alloy

IT Machining

(chem. milling, **hydrofluoric acid** bath for, with hydrogen-sorption inhibitors)

IT 12606-77-8, **Ti**-6Al-6V-2Sn 12743-70-3, **Ti**-6Al-4V 51809-47-3, **Ti**-10V-2Fe-3Al

(chem. milling of, bath with hydrofluoric acid for, with hydrogen-sorption inhibitor)

IT 7440-32-6, **Titanium**, reactions

(chem. milling of, bath with hydrofluoric acid for, with hydrogen-sorption inhibitor)

IT 3811-04-9, Potassium chlorate 31499-96-4

(**etching** bath contg., for **titanium** alloys, **hydrofluoric acid** in)

IT 7722-84-1, Hydrogen peroxide, reactions 7727-21-1

7727-54-0, Ammonium peroxysulfate 7775-09-9, Sodium chlorate 10192-29-7, Ammonium chlorate

(**etching** bath contg., for **titanium** alloys, **hydrofluoric acid** in)

IT 7664-39-3, **Hydrofluoric acid**, reactions

(**etching** bath contg., for **titanium** alloys, hydrogen-sorption inhibitors in)

L81 ANSWER 15 OF 27 HCA COPYRIGHT 2001 ACS

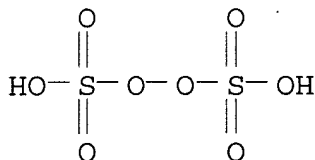
119:186610 Acidic fluoride bath for pickling, **etching**, and/or milling of **titanium** alloy articles. Dastolfo, Leroy E., Jr. Dastolfo, LeRoy E., Jr.; Tarcy, Gary P. (Aluminum Co. of America, USA). U.S. US 5215624 A 19930601, 7 pp. Cont.-in-part of U.S. 5,100,500. (English). CODEN: USXXAM. APPLICATION: US 1991-807725 19911216. PRIORITY: US 1991-652587 19910208.

AB Nitrate-free aq. bath for chem. milling and related surface treatments contains NH_4F . **HF** 5-100, **HCl**

.1 to req. 90, and chlorate as H inhibitor .5 to req. 30 g/L (esp. NaClO_3 at 40-650 g/L). The bath is suitable for milling of **Ti** alloys as well as com. **Ti**, preferably at 21-71.degree.. The chlorate is optionally replaced with peroxysulfate at .5 to req. 180 g/L, esp. $(\text{NH}_4)_2\text{S}_2\text{O}_8$ at 200-350 g/L. For **Ti**-10V-2Fe-3Al alloy specimens milled at 54.degree., the milling rate was 2100 mil/min in the aq. bath contg. NH_4F . **HF** 48 g/L, 36.5% **HCl** 70 mL/L, and NaClO_3 60 g/L, and the residual H

content was 30 ppm, vs. 0.406 mil/min and 465 ppm in the absence of NaClO₃.

IT 7727-54-0, Ammonium peroxysulfate
(chem. milling bath contg., for **titanium** alloy
articles, acidic fluoride in nitrate-free)
RN 7727-54-0 HCA
CN Peroxydisulfuric acid ([(HO)S(O)2]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



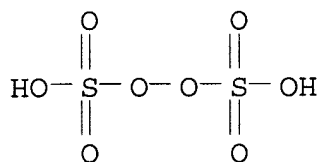
• 2 NH₃

IT 7440-32-6, **Titanium**, reactions
(chem. milling of, acidic **fluoride** bath for,
hydrogen inhibitors in nitrate-free)
RN 7440-32-6 HCA
CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

IC ICM B44C001-22
ICS C23F001-00; C09K013-04; C09K013-08
NCL 156637000
CC 56-11 (Nonferrous Metals and Alloys)
ST **titanium** alloy chem milling bath; ammonium bifluoride
milling **titanium**; bifluoride milling bath **titanium**
alloy; chlorate milling bath **titanium** alloy; peroxysulfate
milling bath **titanium** alloy
IT Machining
(chem. milling, acidic fluoride bath in, for **titanium**
alloy articles)
IT **Titanium** alloy, base
(chem. milling of, acidic **fluoride** bath for,
hydrogen inhibitors in nitrate-free)
IT 7727-54-0, Ammonium peroxysulfate 7775-09-9 12188-01-1
14866-68-3, Chlorate
(chem. milling bath contg., for **titanium** alloy
articles, acidic fluoride in nitrate-free)
IT 1341-49-7, Ammonium bifluoride
(chem. milling bath contg., for **titanium** alloy
articles, **hydrogen** inhibitor in aq.)
IT 7647-01-0, **Hydrochloric acid**, reactions

- (chem. milling bath contg., for **titanium** alloy articles, hydrogen inhibitor in aq.)
- IT 12606-77-8, **Ti**-6Al-6V-2Sn 12743-70-3, **Ti**-6Al-4V 51809-47-3, **Ti**-10V-2Fe-3Al
(chem. milling of, acidic **fluoride** bath for, **hydrogen** inhibitors in nitrate-free)
- IT 7440-32-6, **Titanium**, reactions
(chem. milling of, acidic **fluoride** bath for, **hydrogen** inhibitors in nitrate-free)
- L81 ANSWER 16 OF 27 HCA COPYRIGHT 2001 ACS
- 116:119552 Selective chemical removal of the coil seed layer in thin-film magnetic transducer head manufacture. Cohen, Uri; Hsie, Wei C. (Seagate Technology, USA). U.S. US 5059278 A 19911022, 10 pp. (English). CODEN: USXXAM. APPLICATION: US 1990-590007 19900928.
- AB The seed layer or metalization layer used to form the coil winding in a thin-film magnetic recording head by electrodeposition, is removed from between individual winding turns by selective **etching** with an **etchant** which preferentially attacks the seed layer while leaving the coil winding, insulation, and gap materials intact. A suitable combination of materials for the seed layer, coil winding, and **etchant** is Ni-Fe Permalloy, **Cu**, and HNO₃-H₃PO₃-H₂O, resp.
- IT 7727-54-0, Ammonium persulfate
(**etching** of seed layers by solns. contg., in presence of coil windings, in magnetic head manuf.)
- RN 7727-54-0 HCA
- CN Peroxydisulfuric acid ([**(HO)S(O)₂**]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

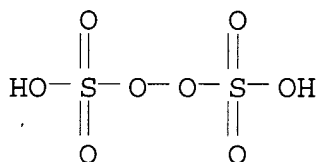
- IT 7440-32-6, **Titanium**, properties
(**etching** of seed layers of, in presence of coil windings, in magnetic head manuf.)
- RN 7440-32-6 HCA
- CN Titanium (8CI, 9CI) (CA INDEX NAME)

Ti

- IT 7440-50-8, **Copper**, properties
(selective **etching** of seed layers in presence of coil windings from, in magnetic head manuf.)
- RN 7440-50-8 HCA
- CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)
- Cu
- IC ICM B44C001-22
ICS C23F001-02
- NCL 156643000
- CC 77-8 (Magnetic Phenomena)
- ST coil seed layer **etching** magnetic head
- IT Recording apparatus
(magnetic heads, selective **etching** of seed layer from coil windings in manuf. of)
- IT **Etching**
(selective, of seed layers in presence of coil windings in manuf. of magnetic heads)
- IT 7647-01-0, Hydrochloric acid, properties 7664-38-2, Phosphoric acid, properties 7664-93-9, Sulfuric acid, properties 7697-37-2, Nitric acid, properties 7705-08-0, Ferric chloride, properties 7722-84-1, Hydrogen peroxide, properties 7727-54-0, Ammonium persulfate
(**etching** of seed layers by solns. contg., in presence of coil windings, in magnetic head manuf.)
- IT 11101-13-6 11148-32-6 12647-03-9 121862-79-1
(**etching** of seed layers of, in presence of coil windings, in magnetic head manuf.)
- IT 7439-98-7, Molybdenum, properties 7440-03-1, Niobium, properties 7440-25-7, Tantalum, properties 7440-32-6, **Titanium**, properties 7440-33-7, Tungsten, properties 7440-43-9, Cadmium, properties 7440-47-3, Chromium, properties 7440-62-2, Vanadium, properties 7440-67-7, Zirconium, properties 7440-74-6, Indium, properties
(**etching** of seed layers of, in presence of coil windings, in magnetic head manuf.)
- IT 7440-05-3, Palladium, properties 7440-06-4, Platinum, properties 7440-22-4, Silver, properties 7440-50-8, **Copper**, properties 7440-57-5, Gold, properties
(selective **etching** of seed layers in presence of coil windings from, in magnetic head manuf.)
- L81 ANSWER 17 OF 27 HCA COPYRIGHT 2001 ACS
- 115:237669 **Etching** bath for vibratory finishing of nickel, titanium, and their alloys. Michaud, Mark D.; Zobbi, Robert G. (Rem Chemicals, Inc., USA). U.S. US 5051141 A 19910924, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1990-502515 19900330.
- AB The aq. bath suitable for vibratory **etching** and polishing at pH of 1.0-4.0 contains 0.04-1.17M sulfonic acid and its derivs., 0.03-3.16M F-, and 0.02-0.60M peroxy compd. (esp. H2O2). The powder

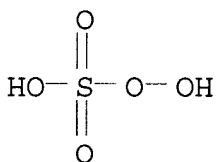
mixt. for bath prepn. contains 75-90 sulfonic acid and 10-25% NH₄FHF, and is used with addn. of a peroxy powder. The bath is suitable for vibratory finishing of Ti, Ti alloys, Ni, and Ni alloys. Thus, milled turbine blades from Ti-6Al-4V alloy were polished in a vibratory bath (pH of 1-1.5) contg. 113 L with 3.36 kg sulfamic acid NH₄F.HF 180 g, and 1.10 L of 35% H₂O₂. After 48 h the Ti-alloy surface was free of pits, and showed white finish assocd. with TiO₂ film. Without H₂O₂ the similar bath showed corrosion without the polishing effect.

- IT 7727-54-0, Ammonium persulfate 15593-29-0, Sodium persulfate
 (polishing bath contg., for nickel and titanium alloys, vibratory finishing in acidic)
- RN 7727-54-0 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



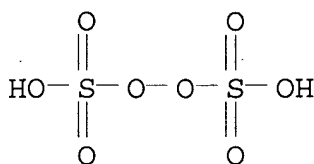
0 2 NH₃

- RN 15593-29-0 HCA
- CN Peroxymonosulfuric acid, disodium salt (8CI, 9CI) (CA INDEX NAME)



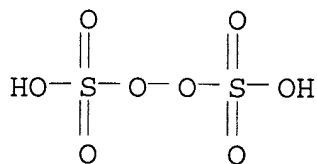
0 2 Na

- IT 7727-21-1, Potassium persulfate
 (polishing bath contg., for nickel and titanium alloys, vibratory finishing on acidic)
- RN 7727-21-1 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), dipotassium salt (9CI) (CA INDEX NAME)



0 2 K

- IC ICM C23F007-06
 NCL 148269000
 CC 56-6 (Nonferrous Metals and Alloys)
 IT 13463-67-7, Titanium oxide (TiO₂), uses and miscellaneous
 (coating with, of titanium alloy parts,
 vibratory polishing in acidic bath for)
 IT 4452-58-8, Sodium percarbonate 7727-54-0, Ammonium
 persulfate 11138-47-9, Sodium perborate 15593-29-0,
 Sodium persulfate
 (polishing bath contg., for nickel and titanium alloys, vibratory
 finishing in acidic)
 IT 124-43-6 7727-21-1, Potassium persulfate 12653-78-0,
 Potassium perborate
 (polishing bath contg., for nickel and titanium alloys, vibratory
 finishing on acidic)
- L81 ANSWER 18 OF 27 HCA COPYRIGHT 2001 ACS
 115:62832 Manufacture of vapor-deposited **copper** circuit on
 ceramic substrate having metal overcoating. Iizuka, Tomio; Sanki,
 Sadahiko; Tamura, Koichi (Hitachi Cable, Ltd., Japan). Jpn. Kokai
 Tokkyo Koho JP 03060185 A2 19910315 Heisei, 6 pp. (Japanese).
 CODEN: JKXXAF. APPLICATION: JP 1989-195671 19890728.
- AB The title substrate is prepd. by vapor deposition of an alloy of
 .gtoreq.99.999% **Cu** and 4-30 ppm rare earth metal to form
 an elec. conductive layer, which is patterned and coated with a
 metal except **Cu** by electrodeposition, and optionally
 overcoated with a noble metal. The manuf. is useful for a pin grid
 array substrate. Thus, an alumina substrate was undercoated by Cr
 or **Ti**, vapor-deposited by using 99.999% **Cu**
 contg. 7 ppm Ce, photolithog. patterned by using a soln. contg.
 ammonium persulfate and ammonium chloride, and successively
 electrodeposited by Ni and Au to give the title substrate showing
 prevention of abnormal Ni whisker growth.
- IT 7727-54-0, Ammonium persulfate
 (aq. soln. contg., for **etchant**, for **copper**
 elec. circuit)
- RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

- IT 7440-50-8, **Copper**, uses and miscellaneous
(microalloyed, with rare earth metal, for vapor deposition for
elec. circuit on ceramic support)
- RN 7440-50-8 HCA
- CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)
- Cu
- IC ICM H05K003-24
- ICA C23C014-18; C23C014-24; C25D007-12; H05K003-14
- CC 76-14 (Electric Phenomena)
- ST **copper** vapor deposition elec circuit; ceramic
copper circuit metal coating; rare earth metal
copper alloy; cerium **copper** alloy vapor
deposition; nickel coating **copper** elec circuit; gold
coating **copper** elec circuit; pin grid array substrate
circuit
- IT Rare earth metals, uses and miscellaneous
(**copper** microalloyed with, for vapor deposition for
circuit on ceramic support)
- IT Electric circuits
(**copper**, on ceramic substrate, vapor deposition of
alloy contg. rare earth metal for)
- IT 7727-54-0, Ammonium persulfate 12125-02-9, Ammonium
chloride, uses and miscellaneous
(aq. soln. contg., for **etchant**, for **copper**
elec. circuit)
- IT 7440-45-1, Cerium, uses and miscellaneous
(**copper** microalloyed with, for vapor deposition for
circuit on ceramic support)
- IT 7440-50-8, **Copper**, uses and miscellaneous
(microalloyed, with rare earth metal, for vapor deposition for
elec. circuit on ceramic support)
- IT 7440-57-5, Gold, uses and miscellaneous
(overcoating, for **copper** circuit on ceramic support)
- IT 7440-02-0, Nickel, uses and miscellaneous
(overcoating, prevention of abnormal growth of, for
copper circuit on ceramic support)

IT 1344-28-1, Alumina, uses and miscellaneous
(support, for elec. circuit, vapor deposition of **copper**
contg. rare earth metal for)

L81 ANSWER 19 OF 27 HCA COPYRIGHT 2001 ACS

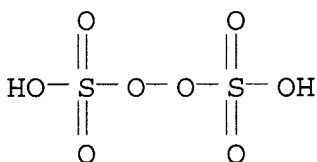
114:190709 **Etching** process for removal of tin and tin-lead
alloy **layers** on **copper** substrates. Haruta,
Takashi; Nagano, Takaharu; Kishimoto, Takeyoshi; Yamada, Yasushi;
Yuno, Tomoko (Mec K. K., Japan). Eur. Pat. Appl. EP 413261 A2
19910220, 6 pp. DESIGNATED STATES: R: BE, DE, GB, IT, NL.
(English). CODEN: EPXXDW. APPLICATION: EP 1990-115319 19900809.
PRIORITY: JP 1989-211497 19890818.

AB The **etching** process consists of: (1) dissolving the Sn or
Sn-Pb alloy layer in the redox bath contg. an arom. compd. with a
nitro substituent (preferably Na n-nitrobenzenesulfonate [I]), an
org. or inorg. acid (preferably HNO₃), and a halogen-contg. compd.
(esp. NaCl); and (2) addnl. oxidative dissoln. of the Sn-Ca
intermetallic compd., esp. with an aq. bath contg. FeCl₃, CuCl₂, or
persulfates. The process is suitable for removal of Sn-contg.
solder residue from **Cu** on elec. printed-circuit board, and
leaves no pptd. residue on **Cu**. Thus, the Sn-40% Pb solder
layer on epoxy-glass board having a **Cu** pattern was removed
in 30 s by the 1st **etching** in aq. bath contg. I 100, HNO₃
400, glycolic acid 100, and NaCl 10 g/L. The residual **film**
of Sn-**Cu** intermetallic compd. was resistant to
etching by the 1st bath, but was removed in 5 s in the 2nd
bath from aq. soln. of FeCl₃ 3 g/L. The 1st bath was stable in
storage during the cumulative solder removal to .ltoreq.80 g/L.

IT 7727-54-0, Ammonium persulfate
(**etching** bath contg., for **copper**, tin residue
removal by)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT 7664-39-3, Hydrofluoric acid, uses and
miscellaneous
(**etching** bath contg., tin alloy removal by, on
copper)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT 7440-50-8, **Copper**, uses and miscellaneous
(tin residues on, removal of, two-stage **etching** process
for)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC ICM C23F001-44

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 76

ST tin **etching** bath **copper** surface; solder tin lead
etching bath; elec circuit **etching** tin solder;
nitrobenzene compd **etching** tin solder; nitric acid
etching tin solder; halide bath **etching** tin
solder; persulfate bath **etching** tin solder

IT Peroxysulfates
(**etching** bath contg., for **copper**, tin residue
removal by)

IT Halides
(**etching** bath contg., tin alloy removal by, on
copper for elec. printed-circuit boards)

IT **Etching**
(of tin-contg. solder, on **copper**, two-bath process for)

IT Solders
(tin-contg., removal on **copper** surface of, two-stage
etching process for)

IT Electric circuits
(printed, boards, **copper layers** on, tin alloy
removal from, by two-stage **etching**)

IT 7447-39-4, Cupric chloride, uses and miscellaneous 7705-08-0,
Ferric chloride, uses and miscellaneous 7727-54-0,
Ammonium persulfate
(**etching** bath contg., for **copper**, tin residue
removal by)

IT 50-21-5, Lactic acid, uses and miscellaneous 64-19-7, Acetic acid,
uses and miscellaneous 75-75-2, Methanesulfonic acid 79-14-1,
Glycolic acid, uses and miscellaneous 127-68-4, Sodium
m-nitrobenzenesulfonate 5329-14-6, Sulfamic acid 7647-14-5,
Sodium chloride, uses and miscellaneous 7664-39-3,
Hydrofluoric acid, uses and miscellaneous
7664-93-9, Sulfuric acid, uses and miscellaneous 7697-37-2, Nitric
acid, uses and miscellaneous 12125-01-8, Ammonium fluoride
16872-11-0, Borofluoric acid
(**etching** bath contg., tin alloy removal by, on
copper)

IT 7440-31-5, Tin, uses and miscellaneous 12610-63-8 12643-16-2
62258-61-1

(removal of, on **copper** surface, two-stage
etching process for)

IT 7440-50-8, **Copper**, uses and miscellaneous
(tin residues on, removal of, two-stage **etching** process
for)

L81 ANSWER 20 OF 27 HCA COPYRIGHT 2001 ACS

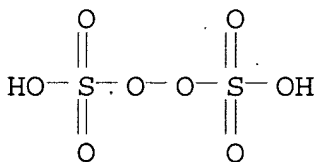
108:10216 **Lamination** of **copper** and resin for
printed-circuit boards. Nakaso, Akishi; Ogino, Haruo; Okamura,
Toshiro; Kimura, Yuko (Hitachi Chemical Co., Ltd., Japan). Jpn.
Kokai Tokkyo Koho JP 62185884 A2 19870814 Showa, 4 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1986-28457 19860212.

AB The bonding is improved in **laminating Cu** wiring
sheets with resin prepregs in manuf. of multilayered
printed-circuit boards. The Cu surface is oxidized with an aq.
oxidant and then reduced in an aq. soln. (pH .gtoreq.9) contg. HCHO
for a surface potential of -400 mV (refer to a Ag-AgCl electrode)
before lamination with the resin. Thus, **Cu-wired**
sheets were **etched** with aq. (NH₄)₂S₂O₈, dipped 2
min in an aq. soln. (75.degree.) contg. NaOH 0.5, Na₃P 1.5, and
NaClO₂ 3% and then 3 s in aq. 37% HCHO at 50.degree. and pH 12.5
(adjusted with NaOH), cleaned, and then redipped 2 min in the aq.
HCHO. The treated **Cu sheets** (-900 mV) were
inter-laminated with epoxy resin prepregs at 60 kg/cm² and
170.degree.. The resulting board with peeling strength 1.2 kg/cm
resisted infiltration of aq. 19% **HCl** and a
Cu-electroplating soln.

IT 7727-54-0, Ammonium persulfate
(**etching** with aq., of **copper sheets**
, in manuf. of integrated-circuit boards)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IC ICM C23C022-63

ICS B32B015-08; C08J005-12; C23C022-83

CC 56-9 (Nonferrous Metals and Alloys)
Section cross-reference(s): 38, 76

ST **lamination copper** resin elec circuit; surface
treatment **copper** resin **lamination**

IT **Lamination**
(of **copper sheets** with epoxy resin preplaques
for integrated-circuit boards, surface treatment for)

IT **Etching**
(of **copper sheets**, with aq. ammonium
persulfate, in manuf. of integrated-circuit boards)

IT Epoxy resins, uses and miscellaneous
(preplaques, **lamination** of, with **copper**
sheets, for integrated-circuit boards)

IT Electric circuits
(integrated, boards, **laminating copper**
sheets with resin preplaques for, surface treatment in)

IT **7727-54-0**, Ammonium persulfate
(**etching** with aq., of **copper sheets**
, in manuf. of integrated-circuit boards)

IT **1310-73-2P**, Sodium hydroxide, preparation **7601-54-9** **7758-19-2**,
Sodium chlorite
(oxidn. with aq. soln. contg., of **copper sheets**
, in manuf. of integrated-circuit boards)

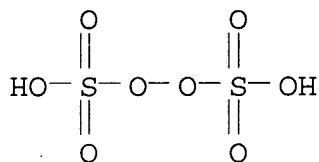
IT **50-00-0**, Formaldehyde, reactions
(redn. with aq., of oxidized **copper sheets**,
in manuf. of integrated-circuit boards)

L81 ANSWER 21 OF 27 HCA COPYRIGHT 2001 ACS
107:63319 Method for removing oxide films from surface of titanium and
titanium alloy articles. Tishchenko, A. A.; Osadchev, L. A.;
Ivlieva, V. I.; Shalimov, V. P.; Efremov, E. A.; Terichev, V. F.;
Varlamov, A. V. (Lumumba, P., University of Friendship of Nations,
USSR). U.S.S.R. SU 1294872 A1 19870307 From: Otkrytiya, Izobret.
1987, (9), 117. (Russian). CODEN: URXXAF. APPLICATION: SU
1985-3928291 19850715.

AB After initial **etching** in a molten salt bath, the surface
of articles is brightened by **etching** in aq. H₂SO₄.
Cleaning quality and process effectiveness of oxide scale removal
are increased by **etching** in molten (NH₄)₂S₂O₈ for 10-15
min at 300-340.degree..

IT **7727-54-0**, Diammonium persulfate
(**etching** in molten, of titanium alloy, oxide scale
removal by)

RN **7727-54-0** HCA
CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

- IC ICM C23G001-28
 CC 56-6 (Nonferrous Metals and Alloys)
 ST **etching** titanium alloy persulfate melt; sodium persulfate
etching titanium; oxide scale **etching** titanium
 alloy
 IT **Etching**
 (of titanium alloy, oxide scale removal and brightening by
 two-stage)
 IT Scale (**coating**)
 (oxide, on **titanium** alloy, **etching** in molten
 persulfate salt for removal of)
 IT Titanium alloy, base
 (**etching** of, oxide scale removal by, molten ammonium
 persulfate salt for)
 IT 7727-54-0, Diammonium persulfate
 (**etching** in molten, of titanium alloy, oxide scale
 removal by)
 IT 7440-32-6, Titanium, reactions
 (**etching** of, oxide scale removal by, molten ammonium
 persulfate salt for)
- L81 ANSWER 22 OF 27 HCA COPYRIGHT 2001 ACS
 102:189490 Lead coating of structural components of **copper** and
 steel sheets. Lehnert, Manfred (Vaillant, Joh., G.m.b.H. und Co.,
 Fed. Rep. Ger.). Ger. Offen. DE 3424480 A1 19850131, 10 pp.
 (German). CODEN: GWXXBX. APPLICATION: DE 1984-3424480 19840629.
 PRIORITY: DE 1983-3326414 19830719.
- AB Heat exchangers consisting of **Cu** tubing and steel or
 stainless steel fins brazed together to form joints are
 simultaneously surface treated for activation of **Cu** and
 passivation of steel by aq. Na₂S₂O₈ at pH .ltoreq.68 optionally
 contg. H₂O₂, H₂SO₄, HNO₃, or H₃PO₄ for hot-dip coating with molten
 Pb. The Pb coating prevents the corrosion of **Cu**-contg.
 parts, while the steel surface remains passive and Pb-free, by
 S-contg. flue gas generated in heating the exchangers. In general,
 the process consists of dipping in H₃PO₄, water mixing, dipping in
 H₂SO₄, water rinsing, dipping in soln. for simultaneous activation
 and passivation, and dip-coating in a Pb melt. Thus, a heat
 exchanger of O-free **Cu** tubing and **Ti**-stabilized

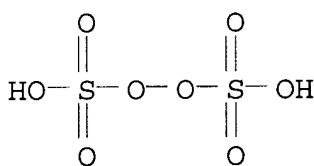
austenitic stainless steel fins was treated in aq. H₃PO₄ at 60.degree., rinsed with hot and cold water, then in cold dil. H₂SO₄, rinsed with cold water, dipped in cold H₂SO₄ soln. contg. Na₂S₂O₈ (pH <6), or H₂SO₄ is substituted by H₂O₂ or HNO₃, followed by Pb coating.

IT 7775-27-1

(**etching** soln. contg., of **copper** pipes for lead coating for heat exchangers)

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), disodium salt (8CI, 9CI)
(CA INDEX NAME)



2 Na

IT 7440-50-8, uses and miscellaneous
(lead coating of pipes from, for heat exchangers)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC ICM C23C001-06

ICS C23G001-02

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 55

ST activation passivation heat exchanger coating; lead coating heat exchanger; **copper** stainless steel heat exchanger

IT Heat-exchange apparatus

(**copper** pipes and stainless steel fins for, **etching** for lead coating and passivation of)

IT **Etching**

(of **copper** pipes, for lead coating, for heat exchangers)

IT Coating process

(hot-dipping, of **copper** pipes, with lead for heat exchangers)

IT 7439-92-1, uses and miscellaneous

(coating with, of **copper** pipe by hot dipping for heat exchangers)

IT 7664-38-2, reactions 7664-93-9, reactions 7697-37-2, reactions
7722-84-1, reactions 7775-27-1

(**etching** soln. contg., of **copper** pipes for
lead coating for heat exchangers)
IT 7440-50-8, uses and miscellaneous
(lead coating of pipes from, for heat exchangers)

L81 ANSWER 23 OF 27 HCA COPYRIGHT 2001 ACS

92:50109 Removing a cured epoxy resin film from a metal surface. Wong,
Ching-Ping (Western Electric Co., Inc., USA). U.S. US 4171240
19791016, 6 pp. (English). CODEN: USXXAM. APPLICATION: US
1978-900367 19780426.

AB Cured epoxy resin adhesives, which are used to **laminate**
Cu or other material to a suitable support in the prodn. of
a photomask, can be removed by treatment with a swelling agent, then
treatment with an oxidizing agent, and subsequently treatment with
an **etchant** comprising H₂SO₄. Thus, a laminate consisting
of a Teflon 100 FEP support, an epoxy resin adhesive **layer**
, and a **Cu layer** was **coated** on the
Cu layer with Riston 116S photoresist, stored in
the dark from 0.5 to 1 h, imagewise exposed, the photoresist
developed in 1,1,1-trichloroethylene, the exposed **Cu**
layer removed by **etching**, the exposed epoxy resin
swollen in CH₂Cl₂, immersed in 10% aq. ammonium persulfate at
25.degree. for 30 s, and then immersed in 98% H₂SO₄ at 145% for 7 s
to completely remove the exposed epoxy resin and give a finished
photomask.

IT 7664-39-3, uses and miscellaneous 7727-54-0
(in epoxy resin adhesive removal in photomask fabrication)

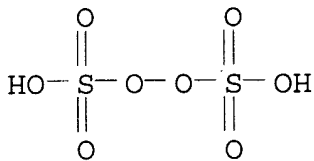
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



0 2 NH₃

IC B29C017-08

NCL 156630000

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic

Processes)

IT 67-56-1, uses and miscellaneous 7664-38-2, uses and miscellaneous
7664-39-3, uses and miscellaneous 7664-93-9, uses and
miscellaneous 7722-84-1, uses and miscellaneous 7727-54-0
11115-74-5

(in epoxy resin adhesive removal in photomask fabrication)

L81 ANSWER 24 OF 27 HCA COPYRIGHT 2001 ACS

74:90476 Dissolution of metals using an aqueous **etching**
solution of **peroxydisulfates**. Radimer, Kenneth J.;
Caropreso, Frank E.; Hogya, Bernard J. (FMC Corp.). U.S. US 3565707
19710223, 5 pp. (English). CODEN: USXXAM. APPLICATION: US
19660224 19690303.

AB Ni, Sn, and their alloys (including P bronze, Invar, Kovar, and
nickel-silver (**Cu** 65, Ni 18, Zn 17%)), not readily
etched by aq. solns. of persulfates alone, were dissolved
at 20-55.degree. with aq. **etchant** contg. 8-45% NH₄, Na, or
K **peroxydisulfate** (preferably 10-25% (NH₄)₂S₂O₈), 0.2-10%
of either H₂SiF₆, HBF₄, or **HF** acid, and conventional
additives. This **etchant** could **etch**
multilayered, metal-laminated, circuit boards with little
undercutting of the metal layers used in the makeup of the circuit.
Single and dual **etching** systems were used. H₂SiF₆, HBF₄,
or **HF**-modified **peroxydisulfate** solns. gave
products of lower quality than those obtained in the dual
etching step, i.e., the use of the modified
peroxydisulfate etchant for **etching** Ni,
Sn, and their alloy overlayers and **etching** of e.g.
Cu underlayer with the aq. (NH₄)₂ S₂O₈ soln.

IT 7664-39-3, reactions
(**etching** by, in printed circuit manuf.)

RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

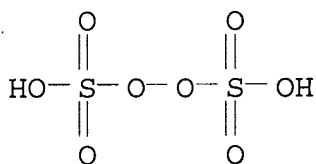
IT 7440-50-8, reactions
(**etching** of, in printed circuit manuf.)

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7727-54-0
(in **etching** bath, for printed circuits)

RN 7727-54-0 HCA
CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IC C23F
 NCL 156003000
 CC 56 (Nonferrous Metals and Alloys)
 ST **peroxydisulfate etchant**; nickel tin alloy
etchant; tin nickel alloy **etchant**; **etchant**
 nickel tin alloy
 IT Invar
 Kovar
 Nickel silver
 (**etching** of, baths contg. **peroxydisulfates**
 for)
 IT Coating process
 (in printed circuit manuf., **etching** baths contg.
peroxydisulfates in relation to)
 IT Tin alloys, base
 (lead-, **etching** of coatings of, in printed circuit
 manuf.)
 IT Tin alloys, base
 (nickel-, **etching** of coatings of, in printed circuit
 manuf.)
 IT **Etching**
 (of **copper** alloys, by **peroxydisulfates** in
 printed circuit manuf.)
 IT Bronze
 (phosphor, **etching** baths contg.
peroxydisulfates for)
 IT Electric circuits
 (printed, **etching** bath for **copper** alloys for)
 IT Lead alloys, containing
 Nickel alloys, containing
 (tin-, **etching** of, in printed circuit manuf.)
 IT 7664-39-3, reactions 7664-93-9, reactions
 (**etching** by, in printed circuit manuf.)
 IT 7440-31-5, reactions 7440-50-8, reactions
 (**etching** of, in printed circuit manuf.)
 IT 7439-97-6, uses and miscellaneous 7727-54-0 16872-11-0
 16961-83-4
 (in **etching** bath, for printed circuits).

L81 ANSWER 25 OF 27 HCA COPYRIGHT 2001 ACS

72:35006 Solubility of titanium in hydrochloric acid in the presence of various oxidizers. Sorokin, I. P.; Babich, D. D.; Malaya, A. V.; Shakhina, E. I. (USSR). Sb. Tr., Vses. Nauch.-Issled. Proekt. Inst. Titana, 3, 169-78 (Russian) 1969. CODEN: STVTAJ.

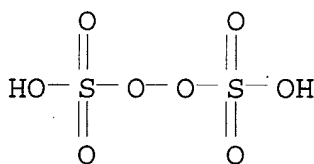
AB The corrosion resistivity of Ti in concd. HCl contg. addns. of various oxidizers (salts of polyvalent metals, H₂O₂, nitrates, **peroxydisulfates**, Cl, etc.) has been investigated. Machined and degreased **Ti sheets** were **etched** in pure HCl and then attacked by the soln. The exptl. results reveal that the corrosion rate, at .apprx.20.degree. and a period of 3 hr decreases to a min. of 0.04-0.08 g/m²-hr in the presence of slight amts. of various oxidizers. For periods of 24-70 hr, the passivation of Ti is obsd. at higher oxidizer concns. This effect of the oxidn. agents is explained by the formation of a tough protective film of Ti_xO_y and TiCl₄.nHCl compds. on the surface of T i. The dissoln. rate strongly increases with temp. rise.

IT 7727-21-1

(passivation by, of titanium)

RN 7727-21-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]O₂), dipotassium salt (9CI) (CA INDEX NAME)



0 2 K

CC 56 (Nonferrous Metals and Alloys)

IT 7631-99-4, reactions 7632-00-0 7697-37-2, reactions 7722-64-7
7727-21-1 7758-05-6 7778-50-9 10025-77-1
(passivation by, of titanium)

L81 ANSWER 26 OF 27 HCA COPYRIGHT 2001 ACS

70:22490 **Etching copper films** bearing a resist pattern to leave the protected pattern with minimum undercutting. Radimer, Kenneth J.; Caropreso, Frank E. (FMC Corp.). U.S. US 3410802 19681112, 3 pp. (English). CODEN: USXXAM. APPLICATION: US 19660221.

AB When such articles as printing plates or elec. printed circuits having a **Cu film**, partly protected by a resist pattern, and supported on an acid-resistant insulator base, are **etched** with 5-25% aq. solns. of a **peroxydisulfate** of NH₄, an alkali or alk. earth metal at 50-150.degree.F., an **etch** factor, or ratio of **etch** depth perpendicular

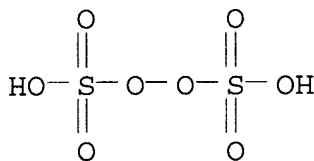
to the resist surface, to the max. linear metal removal under and parallel to the resist directly inward from the resist edge, of 2.3-3.3 is obtained instead of the 1.5-2.0 factors now normally found, if the **etch** soln. is provided with 0.05-0.5 wt. % of microcryst. chrysotile modified to have a SiO₂/MgO ratio of 1.05-1.3 and .apprx.20%, of its particles finer than 1 .mu. in all dimensions. Such chrysotile is prepd. from the natural product contg. equal wts. SiO₂ and MgO by treating as a slurry of 5-10% solids in an acid or salt soln. 0.2N in **HF**, at reflux temp. for 0.5-4.0 hrs., washing the drained product, and mech. disintegrating it, as in a Waring Blendor, preferably with shearing, to produce colloidal sub-.mu. segments of the asbestos fibers. The **etch** solns. can also contain such other addns. as 5 ppm. HgCl₂ as a Cu-soln. catalyst. The **Cu film** can be masked in any way, such as by wax, solder, etc., and it can be applied as a 0.0014 in. foil by bonding to a phenolformaldehyde sheet contg. glass fibers. When a pattern on such sheets was **etched** in a spray **etcher** by 20% NH₄ peroxydisulfate soln. at 100.degree.F. to remove unprotected Cu, the **etch** factor was 1.7, and when thiourea or formamide disulfide was added, it was 1.1-1.8; but when 0.06-0.05% microcryst. modified chrysotile, having 1.22 SiO₂/MgO ratio and 20% sub-.mu. particles was added to the same peroxydisulfate soln., **etch** factors of 2.9-3.3 were obtained.

IT 7727-54-0 7775-27-1 14392-58-6
15578-33-3 18697-38-6

(copper **etching** soln. contg.)

RN 7727-54-0 HCA

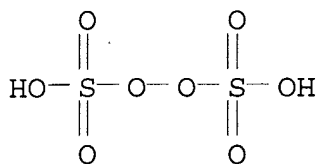
CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

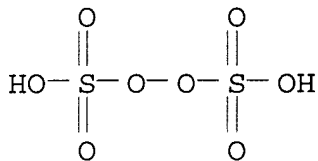
RN 7775-27-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), disodium salt (8CI, 9CI)
(CA INDEX NAME)



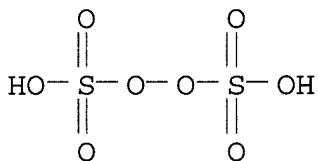
• 2 Na

RN 14392-58-6 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), barium salt (1:1) (9CI) (CA INDEX NAME)



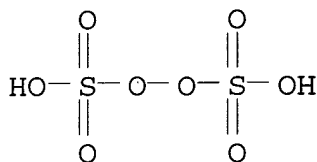
• Ba

RN 15578-33-3 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), strontium salt (1:1) (9CI) (CA INDEX NAME)



• Sr

RN 18697-38-6 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dilithium salt (9CI) (CA INDEX NAME)



0 2 Li

NCL 252079100
 CC 56 (Nonferrous Metals and Alloys)
 ST **copper films etching; films**
Cu etching; etching Cu
films
 IT **Etching**
 (of copper plates, soln. for prevention of undercutting in)
 IT Printing
 (plates, **etching** of copper)
 IT Electric circuits
 (printed, **etching** of copper)
 IT Chrysotile
 (copper **etching** soln. contg.)
 IT 7727-54-0 7775-27-1 14392-58-6
 15578-33-3 18697-38-6
 (copper **etching** soln. contg.)
 IT 7440-50-8, reactions
 (**etching** of plates of, soln. for prevention of
 undercutting in)

L81 ANSWER 27 OF 27 HCA COPYRIGHT 2001 ACS
 68:101283 Electrolytic regeneration of **copper**
 sulfate-containing **etching** solutions. Schmidt, Heinrich;
 Schmidt, Herbert (Schmidt, Herbert). Ger. DE 1264920 19680328, 4
 pp. (German). CODEN: GWXXAW. APPLICATION: DE 19650720.
 AB **Peroxydisulfate etching** soln. contg. **Cu**
 and catalyst such as Hg is freed from **Cu** and
 simultaneously regenerated by adding to the cooled soln. 0.1-0.3
 g./l. of inorg. acids such as HCl and introducing it into an anode
 chamber contg. Pt anodes from which it passes through porous
 diagrams (permeability 350-3000 cm.3/4000 cm.2) under a hydrostatic
 pressure of 0.3-5 cm. to a cathode chamber contg. cathodes composed
 of porous hard poly(vinyl chloride) sacks filled with metal shavings
 of **Cu**, **Ta**, and **Ti** or graphite. Any **Cu**
 salts pptd. in the cooling step are introduced directly into the
 cathode chamber. Thus, a soln. circulating at 6 l./hr. and contg.
 100 g. **peroxydisulfate**/l. and 35 g. **Cu**/l. as
CuSO4 is regenerated to 120 g. **peroxydisulfate** and 30 g.
Cu/l. by completely decoppering 1 l. of soln. and generating

238 g. **peroxydisulfate** (efficiency 70%) at 80 amp. and 5
v.
IT 7440-50-8P, preparation
(recovery of, electrolytic, from **etching** solns. for
copper circuits)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC C23B
CC 77 (Electrochemistry)
ST **COPPER SULFATE ETCHING SOLNS;**
PEROXYDISULFATE ETCHING SOLNS; SULFATE
ETCHING SOLNS; ETCHING SOLNS
IT **Etching**
(electrolytic, recovery of **copper** and
peroxydisulfate from solns. for)
IT 7440-50-8P, preparation 15092-81-6P
(recovery of, electrolytic, from **etching** solns. for
copper circuits)

=> d 182 1-18 ti

L82 ANSWER 1 OF 18 HCA COPYRIGHT 2001 ACS
TI Removal (stripping) of copper and **copper** alloy
layers

L82 ANSWER 2 OF 18 HCA COPYRIGHT 2001 ACS
TI Aqueous **etchant**, electric circuit board, and its
manufacture using same **etchant**

L82 ANSWER 3 OF 18 HCA COPYRIGHT 2001 ACS
TI Polymethacrylate aqueous dispersion for chemical mechanical
polishing

L82 ANSWER 4 OF 18 HCA COPYRIGHT 2001 ACS
TI **Microetching** and cleaning of printed wiring boards

L82 ANSWER 5 OF 18 HCA COPYRIGHT 2001 ACS
TI Solution for forming rough surface on conductive layer, its
manufacture, and manufacture of printed circuit board using it

L82 ANSWER 6 OF 18 HCA COPYRIGHT 2001 ACS
TI **Microetching** and cleaning of printed wiring boards

L82 ANSWER 7 OF 18 HCA COPYRIGHT 2001 ACS
TI Characterization of copper waveguides mid-IR with applications in
medicine

- L82 ANSWER 8 OF 18 HCA COPYRIGHT 2001 ACS
TI **Etching** solution for copper and **etching** of **copper layer** with it
- L82 ANSWER 9 OF 18 HCA COPYRIGHT 2001 ACS
TI Printed circuit boards
- L82 ANSWER 10 OF 18 HCA COPYRIGHT 2001 ACS
TI Copper tape transfer for high power applications
- L82 ANSWER 11 OF 18 HCA COPYRIGHT 2001 ACS
TI Process for removing a polyimide resin by dissolution
- L82 ANSWER 12 OF 18 HCA COPYRIGHT 2001 ACS
TI Method of removing zinc oxide from one-ounce **copper foil** using sodium persulfate solution
- L82 ANSWER 13 OF 18 HCA COPYRIGHT 2001 ACS
TI Solution for selective **etching** of copper
- L82 ANSWER 14 OF 18 HCA COPYRIGHT 2001 ACS
TI **Etching** solution for copper
- L82 ANSWER 15 OF 18 HCA COPYRIGHT 2001 ACS
TI Printed circuit board
- L82 ANSWER 16 OF 18 HCA COPYRIGHT 2001 ACS
TI Circuitry with bump contacts
- L82 ANSWER 17 OF 18 HCA COPYRIGHT 2001 ACS
TI Adhesion of electrodeposited layers
- L82 ANSWER 18 OF 18 HCA COPYRIGHT 2001 ACS
TI Metal **etching**

=> d 182 1,2,4,5,6,8,13,14,18 cbib abs hitstr hitind

- L82 ANSWER 1 OF 18 HCA COPYRIGHT 2001 ACS
135:80220 Removal (stripping) of copper and **copper alloy layers**. Ali-Abbassi, Z. (Juterburger Galvanotechnik GmbH (JGT), Germany). Schriftenr. Galvanotech. Oberflaechenbehandl., 29(Kupferschichten), 233-239 (German) 2000. CODEN: SGOCAC. Publisher: Eugen G. Leuze Verlag.
- AB A review with 9 refs. is given on the removal of Cu and Cu -alloy **layers** from parts which are subject for recoppering. Chem. decoppering employs oxidizing agents like permanganate, hydrogen peroxide, perborate, **peroxodisulfate**, chromate, **chloride**, nitrate, and arom. N-compds. Electrochem. procedures are based on anodic oxidn. of Cu and

re-depositon at the cathode. Examples of decoppering baths and working conditions are given. Further topics include pretreatment prior to electrochem. removal, disposal of the baths, and mech. removal of Cu.

CC 56-0 (Nonferrous Metals and Alloys)

Section cross-reference(s): 72

ST review **copper film coating** removal stripping

IT Decomposition
Etching

(electrochem.; removal (stripping) of copper and **copper alloy coatings** and films by)

IT Coating materials

(metal; removal (stripping) of copper and **copper alloy coatings** and films)

IT Coating removers

Electrodeposits

Films

(removal (stripping) of copper and **copper alloy coatings** and films)

IT Electrolysis

(removal (stripping) of copper and **copper alloy coatings** and films by)

IT Copper alloy, base

(removal (stripping) of copper and **copper alloy coatings** and films)

IT 7440-50-8, Copper, processes

(removal (stripping) of copper and **copper alloy coatings** and films)

L82 ANSWER 2 OF 18 HCA COPYRIGHT 2001 ACS

134:216151 Aqueous **etchant**, electric circuit board, and its manufacture using same **etchant**. Chou, Kui-che; Guan, Zhai (Frontec K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2001059191 A2 20010306, 17 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-1127 20000106. PRIORITY: JP 1999-173431 19990618.

AB An aq. **etchant** for Cu contains KHSO₅. An aq. **etchant**, for a Ti film/Cu film

laminate, contains KHSO₅ and HF. Alternatively, an aq. **etchant** for the laminate contains a peroxosulfate and .gtoreq.1 selected from HF, HCl, a **chloride**, and a fluoride. An aq. **etchant**, for a Mo film/**Cu film laminate**, contains KHSO₅, H₃PO₄, and HNO₃. An aq. **etchant**, for a Cr film/**Cu film laminate**, contains KHSO₅ and

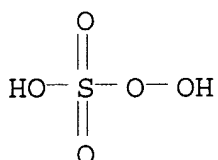
HCl. In manuf. of an elec. circuit board, a Cu wiring or a wiring made of a Ti (alloy)/**Cu laminate** is formed by using the **etchant**. The elec. circuit board is also claimed. The **etching** proceeds without generation of tapered **etched** shape and stirring the **etchant**.

IT 10058-23-8, Potassium **peroxymonosulfate** (KHSO₅)
28831-12-1, Sodium **peroxymonosulfate** (NaHSO₅)

(aq. **etchant** contg. KHSO₅ for **Cu** (**laminated** with other metal film) and manuf. of elec. circuit board contg. **Cu** (**lamine**) wiring)

RN 10058-23-8 HCA

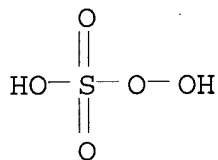
CN Peroxymonosulfuric acid, monopotassium salt (8CI, 9CI) (CA INDEX NAME)



● K

RN 28831-12-1 HCA

CN Peroxymonosulfuric acid, monosodium salt (9CI) (CA INDEX NAME)



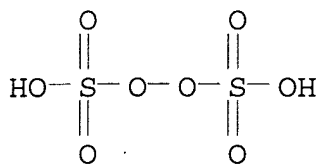
● Na

IT 7727-21-1 7727-54-0 7775-27-1, Sodium peroxodisulfate

(aq. **etchant** contg. peroxosulfate for **Cu** /metal **lamine** film and manuf. of elec. circuit board)

RN 7727-21-1 HCA

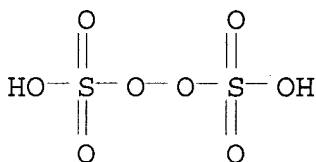
CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), dipotassium salt (9CI) (CA INDEX NAME)



• 2 K

RN 7727-54-0 HCA

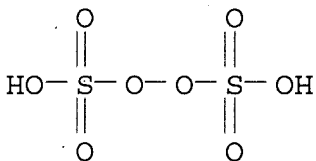
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

IC ICM C23F001-18

ICS C09K013-00; C09K013-06; H01L021-308; H01L021-3205; H01L029-786;
H01L021-336

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 56

ST potassium hydrogenperoxosulfate etchant etching
copper; molybdenum copper laminate

- etching potassium peroxymonosulfate; chromium molybdenum copper laminate etching potassium hydrogenperoxosulfate; titanium copper laminate etching potassium hydrogenperoxosulfate; wiring copper etching etchant potassium hydrogenperoxosulfate; elec circuit wiring etching potassium hydrogenperoxosulfate
- IT Electric circuits
 (aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)
- IT Alkali metal chlorides
 Alkali metal fluorides
 Chlorides, uses
 Fluorides, uses
 (etchant component; aq. etchant contg. peroxosulfate for Cu/metal laminate film and manuf. of elec. circuit board)
- IT Etching
 (etchant; aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)
- IT Electric conductors
 (wiring; aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)
- IT Chromium alloy, base
 Molybdenum alloy, base
 Titanium alloy, base
 (laminated with copper film; aq. etchant contg. peroxosulfate for Cu/metal laminate film and manuf. of elec. circuit board)
- IT 10058-23-8, Potassium peroxymonosulfate (KHSO5)
 28831-12-1, Sodium peroxymonosulfate (NaHSO5)
 (aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)
- IT 7727-21-1 7727-54-0 7775-27-1, Sodium peroxodisulfate
 (aq. etchant contg. peroxosulfate for Cu /metal laminate film and manuf. of elec. circuit board)
- IT 64-19-7, Acetic acid, uses 7647-01-0, Hydrogen chloride, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses 7697-37-2, Nitric acid, uses
 (etchant component; aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)
- IT 12125-01-8, Ammonium fluoride 12125-02-9, Ammonium

chloride, uses

(etchant component; aq. etchant contg. peroxosulfate for Cu/metal laminate

film and manuf. of elec. circuit board)

IT 7439-98-7, Molybdenum, processes 7440-32-6, Titanium, processes 7440-47-3, Chromium, processes 12683-48-6

(laminated with copper film; aq. etchant contg. peroxosulfate for Cu/metal laminate film and manuf. of elec. circuit board)

IT 7440-50-8, Copper, processes

(wiring; aq. etchant contg. KHSO5 for Cu (laminated with other metal film) and manuf. of elec. circuit board contg. Cu (laminate) wiring)

L82 ANSWER 4 OF 18 HCA COPYRIGHT 2001 ACS

130:103947 **Microetching** and cleaning of printed wiring boards.

Arabinick, Nancy D. (FMC Corporation, USA). U.S. US 5855805 A 19990105, 8 pp., Cont.-in-part of U.S. Ser. No. 695,846, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1997-899033 19970722. PRIORITY: US 1996-695846 19960808.

AB The **microetching** and cleaning of **Cu-clad**

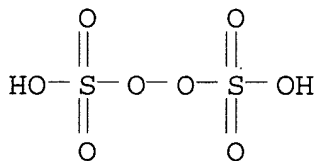
substrates in printed wiring board prodn. with solns. contg. alkali metal persulfate and H2SO4 is controlled to provide slower and more consistent Cu **etch** rates by the presence of high proportions of alkali metal sulfate or an alkali metal sulfate/bisulfate mixt. in the solns., in a mole ratio of persulfate to sulfate or sulfate/bisulfate mixt. of 1:0.1-1:10. When bisulfate is present with the sulfate, the sulfate will comprise at least .apprx.10 mol% of the sulfate/bisulfate mixt. A surfactant may be present in the solns. to aid wettability on the **Cu-clad** substrates.

IT 7775-27-1, Sodium persulfate

(**microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), disodium salt (8CI, 9CI) (CA INDEX NAME)



0 2 Na

IC ICM C11D009-04

- ICS B44C001-22; C03C015-00
 NCL 216106000
 CC 76-14 (Electric Phenomena)
 ST **microetching** cleaning printed wiring board; **copper clad** printed wiring board **microetching** cleaning
 IT Ethoxylated alcohols
 (C12-13; **microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
 IT Ethoxylated alcohols
 (C12-15; **microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
 IT Anionic surfactants
 Cationic surfactants
 Nonionic surfactants
 (**microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
 IT Tri-C8-10-alkylmethyllummonium **chlorides**
 (**microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
 IT Cleaning
 Etching
 Printed circuit boards
 (**microetching** and cleaning of printed wiring boards)
 IT 7440-50-8, Copper, processes
 (**microetching** and cleaning of **Cu-clad** printed wiring boards)
 IT 7664-93-9, Sulfuric acid, processes 7681-38-1, Sodium bisulfate
 7757-82-6, Sodium sulfate, processes 7758-98-7, Copper sulfate,
 processes **7775-27-1**, Sodium persulfate 9002-93-1, Triton
 X 100 13445-49-3D, Persulfuric acid, alkali metal salts
 24938-91-8, Trycol 5943 60828-78-6, Tergitol TMN 6 90093-37-1,
 Soprophor 3D 33
 (**microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
 IT 7664-93-9D, Sulfuric acid, alkali metal salts
 (sulfates and bisulfates; **microetching** and cleaning of **Cu-clad** printed wiring boards by solns. contg.)
- L82 ANSWER 5 OF 18 HCA COPYRIGHT 2001 ACS
 129:210535 Solution for forming rough surface on conductive layer, its manufacture, and manufacture of printed circuit board using it. Tanaka, Isamu; Arakawa, Reiko; Yamaguchi, Yoshihide; Sugiyama, Hisashi; Hamaoka, Nobuo; Hashimoto, Satoshi; Muramatsu, Yoshinori (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10209604 A2 19980807 Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-5933 19970117.
- AB The title soln. comprises a Cu-anticorrosion agent and (1) persulfate, (2) persulfate/acid, (3) H₂SO₄/H₂O₂, (4) FeCl₃, (5) CuCl₂, or (6) tetramminecopper **chloride**. The soln. contains Cu or Cu compds. with total Cu concn. 5-35 g/L. The soln. is manufd. by mixing predetd. components, heating at 40-80.degree. for 10 min-5 h, and controlling its pH at .ltoreq.4. The method for

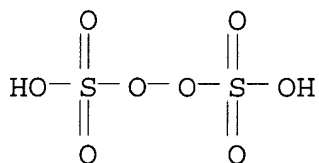
manufg. printed circuit boards involves the process of surface treatment of a conductive layer formed on a substrate by using the soln. before pasting a photoresist for **etching**. High adhesion between conductive layer and photoresist can be achieved.

IT 7727-54-0, Ammonium persulfate 7775-27-1, Sodium persulfate (Na₂S₂O₈)

(rough surface-forming soln. contg. Cu-anticorrosion agent for Cu **etching** in manufg. printed circuit board)

RN 7727-54-0 HCA

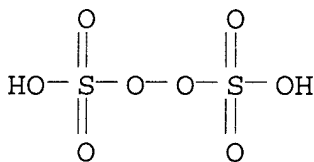
CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

IC ICM H05K003-06

ICS H05K003-06; C23F001-18; C23F011-14; C23F011-16; H05K003-46

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 74

ST printed circuit board **etching** pretreatment; photoresist film adhesion improvement surface treatment; copper anticorrosion agent surface treatment soln; rough surface forming soln copper treatment

IT Photoresists

(rough surface-forming soln. contg. Cu-anticorrosion agent for Cu **etching** for improvement of adhesion of)

IT Corrosion inhibitors

Printed circuit boards

(rough surface-forming soln. contg. Cu-anticorrosion agent for Cu **etching** in manufg. printed circuit board)

IT 91-76-9 108-78-1, Melamine, uses 120-75-2, 2-Methylbenzothiazole
149-30-4, 2-Mercaptobenzothiazole 583-39-1 3194-70-5,
2-Vinyl-4,6-diamino-S-triazine 5606-24-6 6967-12-0,
6-Aminoindazole

(Cu-anticorrosion agent; rough surface-forming soln. contg.
Cu-anticorrosion agent for Cu **etching** in manufg.
printed circuit board)

IT 7440-50-8, **Copper**, processes
(conductive **layer**; rough surface-forming soln. contg.
Cu-anticorrosion agent for Cu **etching** in manufg.
printed circuit board)

IT 7447-39-4, Copper **chloride** (CuCl₂), uses 7664-93-9,
Sulfuric acid, uses 7705-08-0, Iron **chloride** (FeCl₃),
uses **7727-54-0**, Ammonium persulfate 7758-98-7, Copper
sulfate, uses **7775-27-1**, Sodium persulfate (Na₂S₂O₈)
29961-99-7

(rough surface-forming soln. contg. Cu-anticorrosion agent for Cu
etching in manufg. printed circuit board)

L82 ANSWER 6 OF 18 HCA COPYRIGHT 2001 ACS

128:175093 **Microetching** and cleaning of printed wiring boards.

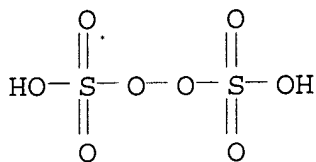
Arabinick, Nancy D. (FMC Corp., USA). PCT Int. Appl. WO 9805516 A1
19980212, 27 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB,
BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU,
IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG,
MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA,
GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG.
(English). CODEN: PIXXD2. APPLICATION: WO 1997-US13680 19970804.
PRIORITY: US 1996-695846 19960808; US 1997-899033 19970722.

AB The **microetching** and cleaning of **Cu-clad**
substrates in printed wiring board prodn. with solns. contg. alkali
metal persulfate and H₂SO₄ is controlled to provide slower and more
consistent Cu **etch** rates by the presence of high
proportions of alkali metal sulfate or an alkali metal
sulfate/bisulfate mixt. in the solns., in a mol ratio of persulfate
to sulfate or sulfate/bisulfate mixt. of 1:0.1-1:10. When bisulfate
is present with the sulfate, the sulfate comprises .gtoreq.10 mol%
of the sulfate/bisulfate mixt. A surfactant may be present in the
solns. to aid wettability on the **Cu-clad**
substrates.

IT **7775-27-1**, Sodium persulfate
(**microetching** and cleaning of printed wiring boards
with solns. contg.)

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

- IC ICM B44C001-22
ICS C23F001-00
- CC 76-14 (Electric Phenomena)
- ST **microetching** cleaning printed wiring board; persulfate
contg **microetching** cleaning soln; sulfate contg
microetching cleaning soln; bisulfate contg
microetching cleaning soln; surfactant contg
microetching cleaning soln; sulfuric acid contg
microetching cleaning soln
- IT Ethoxylated alcohols
(C12-13; **microetching** and cleaning of printed wiring
boards with solns. contg.)
- IT Ethoxylated alcohols
(C12-15; **microetching** and cleaning of printed wiring
boards with solns. contg.)
- IT Sulfates, processes
(hydrogen; **microetching** and cleaning of printed wiring
boards with solns. contg.)
- IT **Etching**
(micro-; of printed wiring boards)
- IT Printed circuit boards
(**microetching** and cleaning of)
- IT Anionic surfactants
Cationic surfactants
Nonionic surfactants
Surfactants
(**microetching** and cleaning of printed wiring boards
with solns. contg.)
- IT Tri-C8-10-alkylmethyllummonium **chlorides**
(**microetching** and cleaning of printed wiring boards
with solns. contg.)
- IT 7440-50-8, Copper, processes
(**microetching** and cleaning of printed wiring boards
clad with)
- IT 7664-93-9, Sulfuric acid, processes 7664-93-9D, Sulfuric acid,
alkali metal salts 7681-38-1, Sodium bisulfate 7757-82-6, Sodium
sulfate, processes 7775-27-1, Sodium persulfate
9002-93-1, Triton X-100 10124-44-4 13445-49-3D, Peroxydisulfuric
acid ([$(\text{HO})\text{S}(\text{O})_2$] $_2\text{O}_2$), alkali metal salts 24938-91-8, Trycol 5943
60828-78-6, Tergitol TMN-6 90093-37-1, Soprophor 3D-33

(**microetching** and cleaning of printed wiring boards with solns. contg.)

L82 ANSWER 8 OF 18 HCA COPYRIGHT 2001 ACS

122:149234 **Etching** solution for copper and **etching**

of **copper layer** with it. Miura, Yasuo;

Kawashima, Yasuko (Toray Industries, Japan). Jpn. Kokai Tokkyo Koho

JP 06330353 A2 19941129 Heisei, 4 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1993-120203 19930521.

AB The soln. contains H₂O and 0.5-6 wt.% ammonium persulfate. A

Cu layer is **etched** with the soln. Cu

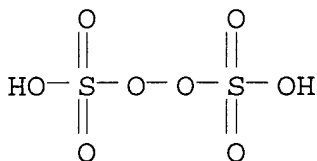
patterns were obtained using the **etching** soln. without side-**etching**.

IT 7727-54-0, Ammonium persulfate

(ammonium persulfate soln. for **etching** of copper without side-**etching**)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IC ICM C23F001-18

ICS C23F001-08; H01L021-306

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 56

ST copper **etching** soln ammonium persulfate

IT Electric conductors

Etching

(ammonium persulfate soln. for **etching** of copper without side-**etching**)

IT 7440-50-8, Copper, processes 7727-54-0, Ammonium persulfate

(ammonium persulfate soln. for **etching** of copper without side-**etching**)

IT 7647-14-5, Sodium **chloride**, processes

(**etchant**; ammonium persulfate soln. for **etching** of copper without side-**etching**)

L82 ANSWER 13 OF 18 HCA COPYRIGHT 2001 ACS

107:63332 Solution for selective **etching** of copper.

Epaneshnikova, V. E.; Molchanovskaya, L. N. ("Krasnodarskii ZIP"

Industrial Enterprises, USSR). U.S.S.R. SU 1301870 A1 19870407
From: Otkrytiya, Izobret. 1987, (13), 106-7. (Russian). CODEN:
URXXAF. APPLICATION: SU 1985-3855020 19850205.

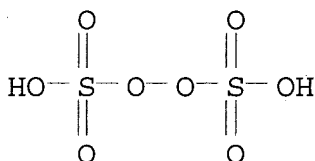
AB To increase the speed of Cu **etching** and decrease undercutting of a substrate made from Ni-Mo alloy and low-m.p. glass, the bath for selective **etching** of Cu **layer** on the substrate contains (NH₄)₂S₂O₈ 150-300, 25% NH₄OH 270-450, and NH₄Cl 12-50 g/L.

IT **7727-54-0**

(**etching** bath contg., for copper)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IC ICM C23F001-18

ICS C23F001-00

CC 56-6 (Nonferrous Metals and Alloys)

ST copper **etching** bath ammonium persulfate; hydroxide
ammonium **etching** bath copper; **chloride** ammonium
etching bath copper

IT **Etching**

(of copper, bath for, ammonium persulfate and hydroxide and
chloride in)

IT 1336-21-6, Ammonium hydroxide **7727-54-0** 12125-02-9,

Ammonium **chloride**, reactions

(**etching** bath contg., for copper)

IT 7440-50-8, Copper, reactions

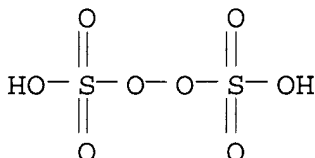
(**etching** of, bath for)

L82 ANSWER 14 OF 18 HCA COPYRIGHT 2001 ACS

99:217166 **Etching** solution for copper. (Fuji Electric
Corporate Research and Development, Ltd., Japan). Jpn. Kokai Tokkyo
Koho JP 58110677 A2 19830701 Showa, 3 pp. (Japanese). CODEN:
JKXXAF. APPLICATION: JP 1981-208479 19811223.

AB Aq. (NH₄)₂S₂O₈ soln. contg. .ltoreq.10 g NH₄Cl/L is used for Cu
etching. Thus, when an aq. soln. contg. 25 g (NH₄)₂S₂O₈/L
and .ltoreq.10 g NH₄Cl/L was used for **etching** a Cu
film, the **etch** rate of 90 .ANG./s was obtained
with control of H evolution and improved uniformity of
etching, compared with 45 .ANG./s using a soln. contg. 25 g

IT (NH₄)₂S₂O₈/L.
 7727-54-0
 (etching soln. contg. ammonium chloride and,
 for copper)
 RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

IC C23F001-00
 CC 56-6 (Nonferrous Metals and Alloys)
 ST copper **etching** ammonium persulfate; **chloride**
 ammonium **etching** copper
 IT **Etching**
 (of copper, soln. contg. ammonium **chloride** and ammonium
peroxydisulfate for)
 IT 7440-50-8, reactions
 (etching of, aq. ammonium **chloride** with
 ammonium **peroxydisulfate** for)
 IT 7727-54-0
 (etching soln. contg. ammonium **chloride** and,
 for copper)
 IT 12125-02-9, reactions
 (etching soln. contg. ammonium **peroxydisulfate**
 and, for copper)
 L82 ANSWER 18 OF 18 HCA COPYRIGHT 2001 ACS
 76:75841 Metal **etching**. Lemmen, Walter Ger. Offen. DE
 2030304 19711223, 9 pp. (German). CODEN: GWXXBX. APPLICATION: DE
 1970-2030304 19700619.
 AB **Laminated Cu-clad** printed circuits are
 rapidly **etched** without damage to the edge surfaces by
 foaming the **etch** soln. by blowing air or O through the
 soln. The aq. **etching** soln., e.g. contg. FeCl₃, H₂SO₄,
 and (NH₄)₂S₂O₈, is foamed by blowing air or O through the soln. The
 finely distributed bubbles cause foam formation on the surface and
 also good mixing of the entire soln. The **Cu-clad**
 circuits are introduced subsequent to foaming. Due to thorough
 mixing of the soln. and the foam, they can be rapidly **etched**
 without damage. An app. for the process is described.
 IC C23F

CC 56 (Nonferrous Metals and Alloys)
 ST printed circuit **etching** soln; **copper**
clad circuits **etching**; ferric **chlorid**
etching soln; sulfuric acid **etching** soln; ammonium
peroxydisulfate etching soln; foam **etching**
 printed circuits
 IT Foams
 (in **etching** copper printed circuits)
 IT **Etching**
 (of copper printed circuits, foaming of **etching** soln.
 in)
 IT Electric circuits
 (printed, **etching** of **copper-clad**,
 with foamed **etching** soln.)

=> d his 186-1100

FILE 'HCA' ENTERED AT 12:08:19 ON 19 DEC 2001

L86 6714 S PHOTOETCH? OR PHOTOENGRAV? OR PLANARIZ? OR PLANARIS?
 L87 0 S L86 AND L30
 L88 20 S L86 AND L29
 L89 152 S L86 AND (L30 OR L35 OR L36 OR L37 OR L28)
 L90 145 S L89 AND (L28 OR L27 OR L53)
 L91 9 S L89 AND L34
 L92 0 S L89 AND L35
 L93 12 S L89 AND (L31 OR L33)
 L94 10 S L89 AND ?CHLORID?
 L95 4 S L93 AND L94
 L96 12 S (L91 OR L95) NOT (L79 OR L84)
 L97 12 S L96 NOT L81
 L98 8 S L88 AND (L28 OR L27 OR L53 OR L31 OR L33 OR L34 OR L33)
 L99 7 S L88 AND ?CHLORID?
 L100 10 S (L98 OR L99) NOT L79

=> d 1100 1-10 cbib abs hitstr hitind

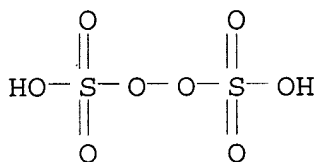
L100 ANSWER 1 OF 10 HCA COPYRIGHT 2001 ACS

135:379700 Polishing liquid and process of structuring metal and metal
 oxide layers. Beitel, Gerhard; Seebacher, Baerbel; Saenger, Annette
 (Infineon Technologies AG, Germany; Siemens Aktiengesellschaft).
 Eur. Pat. Appl. EP 1156091 A1 20011121, 12 pp. DESIGNATED STATES:
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP
 2001-111686 20010514. PRIORITY: DE 2000-10024874 20000516.

AB The invention describes a fluid for a chem.-mech. polishing process
 involving a diamond powder and at least one additive comprising an
 oxidn. agent, a complexing agent, a surfactant, and an org. base.
 With the prescribed polishing fluid, the rate of removal of metal
 layers and metal oxide layers, esp. of those consisting of elements

of group VIII, can be raised. A procedure is described for **planarization** and/or structuring of metal or metal oxide layers using the polishing fluid.

- IT 7775-27-1, Sodium persulfate
 (polishing slurry oxidn. agent; polishing liq. and process of structuring metal and metal oxide layers)
- RN 7775-27-1 HCA
- CN Peroxydisulfuric acid ($[(HO)S(O)_2]_2O_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 Na

- IC ICM C09G001-02
- CC 76-3 (Electric Phenomena)
- IT Bromides, processes
Chlorides, processes
 Crown ethers
 Cyanides (inorganic), processes
 Phosphines
 (polishing slurry complexing agent; polishing liq. and process of structuring metal and metal oxide layers)
- IT 3811-04-9, Potassium chlorate 7705-08-0, Iron **chloride**
 (FeCl_3), processes 7722-84-1, Hydrogen peroxide, processes
 7761-88-8, Silver nitrate, processes 7775-27-1, Sodium
 persulfate 7783-50-8, Iron fluoride (FeF_3) 10028-15-6, Ozone,
 processes 10028-22-5, Iron sulfate ($\text{Fe}_2(\text{SO}_4)_3$) 10031-26-2, Iron
 bromide (FeBr_3) 10421-48-4, Iron nitrate ($\text{Fe}(\text{NO}_3)_3$) 13093-17-9,
 Cerium nitrate ($\text{Ce}(\text{NO}_3)_4$) 13590-82-4, Cerium sulfate ($\text{Ce}(\text{SO}_4)_2$)
 13746-66-2, Potassium ferricyanide 15600-49-4, Iron iodide (FeI_3)
 (polishing slurry oxidn. agent; polishing liq. and process of structuring metal and metal oxide layers)

L100 ANSWER 2 OF 10 HCA COPYRIGHT 2001 ACS

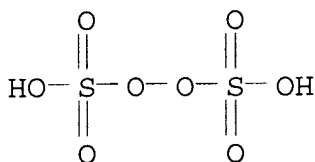
134:335160 Chemical-mechanical **planarization** of copper.

Brusic, Vlasta; Edelstein, Daniel C.; Fenney, Paul M.; Guthrie, William; Jaso, Mark; Kaufman, Frank B.; Lustig, Naftali; Roper, Peter; Rodbell, Kenneth; Thompson, David B. (International Business Machines Corporation, USA). Eur. Pat. Appl. EP 1096556 A1 20010502, 10 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-307999 19991011.

AB Cu or a Cu alloy is removed by chem.-mech. **planarization**

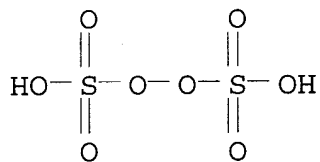
(CMP) in a slurry of an oxidizer, an oxidn. inhibitor, and an additive that appreciably regulates Cu complexing with the oxidn. inhibitor.

IT 7727-21-1, Potassium persulfate 7727-54-0,
Ammonium persulfate
(chem.-mech. **planarization** of copper)
RN 7727-21-1 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dipotassium salt (9CI) (CA
INDEX NAME)



● 2 K

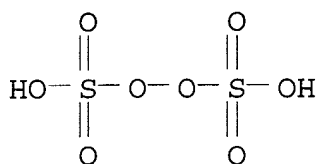
RN 7727-54-0 HCA
CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



● 2 NH₃

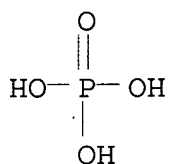
IC ICM H01L021-321
ICS C09G001-00; C09K013-00; B24B037-00
CC 76-2 (Electric Phenomena)
IT Antioxidants
Complexing agents
Oxidizing agents
Slurries
(chem.-mech. **planarization** of copper)
IT Polishing
(chem.-mech.; chem.-mech. **planarization** of copper)
IT Alcohols, processes
(fatty, sodium salts; chem.-mech. **planarization** of
copper)
IT Polishing materials

- (pads; chem.-mech. **planarization** of copper)
- IT Copper alloy, base
(chem.-mech. **planarization** of copper)
- IT 51-17-2, Benzimidazole 94-97-3, 5-Chlorobenzotriazole 95-14-7,
1H-Benzotriazole 136-85-6, 5-Methylbenzotriazole 142-31-4,
Sodium octyl sulfate 555-36-2, Iron(III) stearate 615-15-6
615-16-7, 2-Hydroxybenzimidazole 1336-21-6, Ammonium hydroxide
1344-28-1, Alumina, processes 2592-95-2, 1-Hydroxybenzotriazole
5324-84-5, Sodium octyl sulfonate 7440-50-8, Copper, processes
7647-01-0, **Hydrogen chloride**, processes
7664-93-9, Sulfuric acid, processes 7705-08-0, Ferric
chloride, processes 7722-84-1, Hydrogen peroxide,
processes 7727-21-1, Potassium persulfate
7727-54-0, Ammonium persulfate 7738-94-5, Chromic acid
(H₂CrO₄) 7758-05-6, Potassium iodate 7778-50-9, Potassium
bichromate 10421-48-4, Ferric nitrate 11129-60-5, Manganese
oxide 13351-73-0, 1-Methylbenzotriazole 89699-60-5, Duponol SP
336874-12-5, Duponol WN
(chem.-mech. **planarization** of copper)
- L100 ANSWER 3 OF 10 HCA COPYRIGHT 2001 ACS
- 134:186972 Slurry composition used in semiconductor chemical-mechanical
planarization process. Misra, Ashutosh; Hoffman, Joe G.;
Schleisman, Anthony J. (l'Air Liquide, Societe Anonyme pour l'Etude
et l'Exploitation des Procédés, Fr.). Eur. Pat. Appl. EP 1077241
A2 20010221, 7 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES,
FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO.
(English). CODEN: EPXXDW. APPLICATION: EP 2000-402293 20000816.
PRIORITY: US 1999-PV149312 19990817; US 2000-634852 20000808.
- AB A slurry compn. used in chem.-mech. **planarization** process
on a semiconductor surface comprises 2-50% by wt abrasive particles
such as SiO₂, a suspension medium such as water, 20-40% by wt of the
aq. soln. peroxygen compd. such as H₂O₂, 4-50% by wt of the aq.
soln. etching agent such as **hydrofluoric acid**,
2-50% by wt of the aq. soln. alkyl ammonium hydroxide such as
tetra-Me ammonium fluoride and a stabilizing agent such as sodium
pyrophosphate.
- IT 7664-39-3, **Hydrofluoric acid**, uses
(etching agent; slurry compn. used in semiconductor chem.-mech.
planarization process)
- RN 7664-39-3 HCA
- CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)
- HF
- IT 7727-54-0, Ammonium persulfate
(slurry compn. used in semiconductor chem.-mech.
planarization process)
- RN 7727-54-0 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 NH₃

IT 7664-38-2, **Phosphoric acid**, uses
 (stabilizing agent; slurry compn. used in semiconductor
 chem.-mech. **planarization** process)
 RN 7664-38-2 HCA
 CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C09G001-02
 ICS H01L021-3105
 CC 76-2 (Electric Phenomena)
 ST semiconductor **planarization hydrofluoric acid**
 IT Semiconductor device fabrication
 (slurry compn. used in semiconductor chem.-mech. **planarization** process)
 IT 1306-38-3, Cerium oxide, uses 1344-28-1, Aluminum oxide, uses
 7631-86-9, Silica, uses
 (abrasive particle; slurry compn. used in semiconductor
 chem.-mech. **planarization** process)
 IT 7664-39-3, **Hydrofluoric acid**, uses
 (etching agent; slurry compn. used in semiconductor chem.-mech. **planarization** process)
 IT 75-59-2, Tetramethyl ammonium hydroxide 373-68-2, Tetramethyl
 ammonium fluoride 1341-49-7, Ammonium bifluoride 7722-84-1,
 Hydrogen peroxide, uses 7727-54-0, Ammonium persulfate
 10028-15-6, Ozone, uses 12125-01-8, Ammonium fluoride
 (slurry compn. used in semiconductor chem.-mech. **planarization** process)
 IT 7664-38-2, **Phosphoric acid**, uses
 7722-88-5, Sodium pyrophosphate
 (stabilizing agent; slurry compn. used in semiconductor
 chem.-mech. **planarization** process)

L100 ANSWER 4 OF 10 HCA COPYRIGHT 2001 ACS

133:113675 Method of chemical mechanical **planarization** using copper coordinating ligands in semiconductor device fabrication. Watts, David K.; Farkas, Janos; Gomez, Jason; Dang, Chelsea (Motorola, Inc., USA). U.S. US 6096652 A 20000801, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1997-963438 19971103.

AB A method of CMP of the semiconductor device where the method comprises the sequential steps of providing a semiconductor device, forming a **Cu layer** on the semiconductor device and **planarizing** the **Cu layer** with a medium. The medium comprises an abrasive component and a chem. soln. The chem. soln. comprises H₂O, an oxidizing agent, a 1st coordinating ligand adapted to form a complex with Cu(I) and a 2nd coordinating ligand adapted to form a complex with Cu(II).

IC ICM H01L021-00

NCL 438692000

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66

IT Polishing
(chem.-mech.; method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

IT Amides, processes
Amines, processes
Cyanides (inorganic), processes
Halides
Sulfides, processes
Thioethers
Thiols (organic), processes
(copper coordinating ligands; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

IT Carboxylic acids, processes
(esters, copper coordinating ligands; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

IT Abrasives
Oxidizing agents
Slurries
(in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

IT Complexing agents
Semiconductor device fabrication
(method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

IT Dielectric films
(method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication using)

IT Nitrates, uses
Peroxides, uses
Peroxyulfates
(oxidizing agents; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device

- fabrication)
- IT Halogen compounds
Per compounds
(periodates, oxidizing agents; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT Peroxysulfates
(**peroxydisulfates**, oxidizing agents; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT Peroxysulfates
(**peroxymonosulfates**, oxidizing agents; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT Carboxylic acids, processes
(salts, copper coordinating ligands; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT Interconnections (electric)
(vias; method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication using)
- IT 95-14-7, 1H-Benzotriazole 288-32-4, Imidazole, processes
288-32-4D, Imidazole, derivs. 288-88-0, 1H-1,2,4-Triazole
288-88-0D, 1H-1,2,4-Triazole, derivs.
(Cu(I) coordinating ligand; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 7632-50-0, Ammonium citrate
(Cu(II) coordinating ligand; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 1344-28-1, WA 355, processes 7631-86-9, Silica, processes
(abrasive; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 100-46-9, Benzylamine, processes 126-44-3, Citrate, processes
302-04-5, Thiocyanide, processes
(copper coordinating ligands; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 17493-86-6, Copper(1+), processes
(in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 7440-50-8, Copper, processes
(method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)
- IT 7440-21-3, Silicon, processes
(method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication using)
- IT 7722-84-1, Hydrogen peroxide, processes
(oxidizing agent; in method of chem. mech. **planarization** using copper coordinating ligands in semiconductor device fabrication)

L100 ANSWER 5 OF 10 HCA COPYRIGHT 2001 ACS

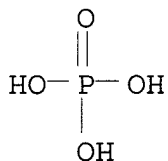
130:260620 **Planarization** of semiconductor substrates and an aqueous etching solution for it. Kruwinus, Hans-Jurgen; Sellmer, Reinhard (SEZ Semiconductor-Equipment Zubehor Fur Die Halbleiterfertigung Ag, Austria). Eur. Pat. Appl. EP 905754 A2 19990331, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 1998-115931 19980824. PRIORITY: AT 1997-1658 19970930.

AB To remove a layer from a substrate having trenches or contact holes such that the layer remains only in the trenches or contact holes, an etchant is supplied as a continuous stream at a flow rate of .gtoreq.0.4 L/min, so that the etchant covers the whole surface of the substrate. A differential etching rate occurs; the etching rate in the areas between the trenches or contact holes is higher than that in the regions of the trenches themselves, so the layer on the surface of the substrate is etched away faster than that in the trenches.

IT **7664-38-2, Phosphoric acid, processes**
(etching by; in **planarization** of semiconductor substrates)

RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3, Hydrogen fluoride, processes**
(etching by; **planarization** of semiconductor substrates with aq. etching solns. contg.)

RN 7664-39-3 HCA

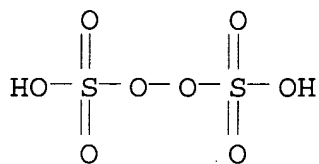
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7727-54-0, Ammonium persulfate 15593-29-0, Sodium peroxymonosulfate** (Na₂(SO₅))
(**planarization** of semiconductor substrates with aq. etching solns. contg.)

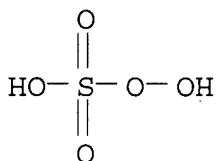
RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), diammonium salt (8CI, 9CI) (CA INDEX NAME)



• 2 NH₃

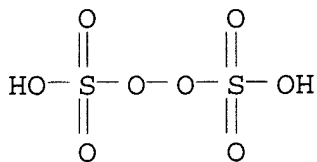
RN 15593-29-0 HCA
 CN Peroxymonosulfuric acid, disodium salt (8CI, 9CI) (CA INDEX NAME)



• 2 Na

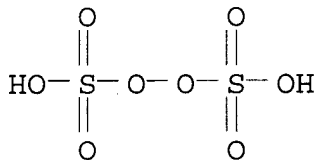
IC ICM H01L021-3105
 ICS H01L021-321; H01L021-311; H01L021-3213
 CC 76-3 (Electric Phenomena)
 ST **planarization** semiconductor substrate aq etching soln
 IT Etching
 Semiconductor materials
 (**planarization** of semiconductor substrates with aq.
 etching soln.)
 IT Contact holes
 (**planarization** of semiconductor substrates with aq.
 etching soln. by removing layers deposited over)
 IT Alcohols, processes
 Glycols, processes
 Organic acids
 Polyoxyalkylenes, processes
 (**planarization** of semiconductor substrates with aq.
 etching solns. contg.)
 IT 7664-38-2, **Phosphoric acid**, processes
 7697-37-2, Nitric acid, processes
 (etching by; in **planarization** of semiconductor
 substrates)
 IT 7647-01-0, **Hydrogen chloride**, processes
 7664-39-3, **Hydrogen fluoride**, processes
 (etching by; **planarization** of semiconductor substrates)

- with aq. etching solns. contg.)
- IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes
 11129-80-9, Platinum silicide 12627-41-7, Tungsten silicide
 12738-91-9, Titanium silicide 59141-85-4, Gold silicide
 (**planarization** of semiconductor substrates by etching
 of)
- IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
 (**planarization** of semiconductor substrates by etching
 of layers on)
- IT 56-81-5, Glycerol, processes 64-17-5, Ethanol, processes
 64-19-7, Acetic acid, processes 7664-93-9, Sulfuric acid,
 processes **7727-54-0**, Ammonium persulfate 12033-62-4,
 Tantalum nitride (TaN) 12125-01-8, Ammonium fluoride (NH₄F)
 13445-49-3D, Peroxydisulfuric acid, alkali metal salts
 13530-68-2D, Chromic acid, alkali metal salts **15593-29-0**,
 Sodium **peroxymonosulfate** (Na₂(SO₅)) 25322-68-3,
 Polyethylene glycol
 (**planarization** of semiconductor substrates with aq.
 etching solns. contg.)
- L100 ANSWER 6 OF 10 HCA COPYRIGHT 2001 ACS
- 129:291702 Chemical-mechanical polishing slurry formulation and method
 for tungsten and **titanium** thin films. Avanzino,
 Stephen C.; Woo, Christy Mei-Chu; Schonauer, Diana Marie; Burke,
 Peter Austin (Advances Micro Devices, Inc., USA). PCT Int. Appl. WO
 9842791 A1 19981001, 31 pp. DESIGNATED STATES: W: JP, KR; RW: AT,
 BE, CH, DE, DK, ES, FI, FR, GB, GR, IE; IT, LU, MC, NL, PT, SE.
 (English). CODEN: PIXXD2. APPLICATION: WO 1998-US6007 19980326.
 PRIORITY: US 1997-829704 19970326.
- AB The title polishing slurry compn. and its method of making for
planarization of silicon semiconductor wafers by chem. mech.
 polishing of the wafer. A slurry formulation utilizing a ferric
 salt tungsten oxidizer, an ammonium persulfate titanium oxidizer, a
 fatty acid suspension agent, alumina particles with a small diam.
 and tight diam. range, coated with a soly. coating, and a chem.
 stabilizer, provides high tungsten and titanium polish rates with
 high selectivity to silicon dioxide, and good oxide defectivity for
 use in tungsten local interconnect applications. A method for
 making a tungsten slurry includes first thoroughly blending small
 diam. alumina particles with a tight diam. range in an aq. conc.
 with a suspension agent, then mixing with water and oxidizers.
 Ferric salt tungsten slurries made by this method provide excellent
 tungsten polish characteristics for via plug and local interconnect
 applications.
- IT **7727-21-1**, Potassium persulfate **7727-54-0**,
 Ammonium persulfate **7775-27-1**, Sodium persulfate
 (chem.-mech. polishing slurry formulation and method for tungsten
 and **titanium** thin films)
- RN 7727-21-1 HCA
- CN Peroxydisulfuric acid ([(HO)S(O)₂]₂O₂), dipotassium salt (9CI) (CA
 INDEX NAME)



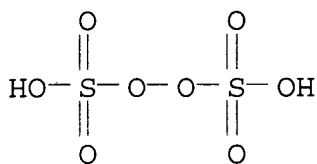
● 2 K

RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



● 2 NH₃

RN 7775-27-1 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



● 2 Na

IC ICM C09G001-02
 ICS C09K003-14
 CC 49-11 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 76
 IT Polyethers, uses
 (aliph.; chem.-mech. polishing slurry formulation and method for
 tungsten and titanium thin films)
 IT Alkylphenols

(alkoxylated; chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin **films**)

- IT Abrasives
Dispersing agents
Oxidizing agents
Polishing materials
(chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin **films**)
- IT Coconut oil
Palm oil
Peanut oil
Polyoxyalkylenes, uses
Vegetable oils
(chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin **films**)
- IT 56-81-5, 1,2,3-Propanetriol, uses 57-10-3, Hexadecanoic acid, uses 57-11-4, Octadecanoic acid, uses 57-55-6, 1,2-Propanediol, uses 77-92-9, uses 88-99-3, 1,2-Benzenedicarboxylic acid, uses 107-21-1, 1,2-Ethanediol, uses 110-15-6, Succinic acid, uses 143-07-7, Dodecanoic acid, uses 409-21-2, Silicon carbide, uses 523-24-0, Diammonium phthalate 544-63-8, Tetradecanoic acid, uses 827-27-0, Monosodium phthalate 877-24-7, Monopotassium phthalate 1141-38-4, 2,6-Naphthalenedicarboxylic acid 1306-38-3, Cerium oxide, uses 1344-28-1, Alumina, uses 2169-87-1, 2,3-Naphthalenedicarboxylic acid 4409-98-7, Dipotassium phthalate 7631-86-9, Silica, uses 7664-93-9D, Sulfuric acid, alkyl esters 7722-84-1, Hydrogen peroxide, uses **7727-21-1**, Potassium persulfate **7727-54-0**, Ammonium persulfate 7758-05-6, Potassium iodate **7775-27-1**, Sodium persulfate 7782-61-8, Ferric nitrate nonahydrate 7783-83-7, Ferric ammonium sulfate dodecahydrate 10025-77-1, Ferric **chloride** hexahydrate 10139-51-2, Ceric ammonium nitrate 12033-89-5, Silicon nitride, uses 14047-56-4 15574-09-1, Ammonium succinate 15968-01-1, Disodium phthalate 17735-77-2, Ammonium hydrogen phthalate 22445-04-1 25322-68-3 57402-46-7, Potassium acetylacetonate hemihydrate, uses 86891-03-4, Sodium acetylacetonate monohydrate, uses 142906-29-4 214209-79-7, Everflo
(chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin **films**)

L100 ANSWER 7 OF 10 HCA COPYRIGHT 2001 ACS

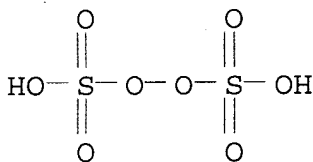
129:291701 Chemical-mechanical polishing slurry formulation and method for tungsten and **titanium** thin **films**. Avanzino, Stephen C.; Woo, Christy Mei-Chu; Schonauer, Diana Marie; Burke, Peter Austin (Advanced Micro Devices, USA). PCT Int. Appl. WO 9842790 A1 19981001, 39 pp. DESIGNATED STATES: W: JP, KR; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US3381 19980220. PRIORITY: US 1997-829704 19970326.

AB The title polishing slurry compn. are used for **planarization** of silicon semiconductor wafers by chem. mech. polishing of the wafer. The slurry formulation utilizes a ferric salt tungsten

oxidizer, an ammonium persulfate titanium oxidizer, a fatty acid suspension agent, alumina particles with a small diam. and tight diam. range, coated with a soly. coating, and a chem. stabilizer, and provides high tungsten and titanium polish rates with high selectivity to silicon dioxide, and good oxide defectivity for use in tungsten local interconnect applications. A method for making a tungsten slurry includes first thoroughly blending small diam. alumina particles with a tight diam. range in an aq. conc. with a suspension agent, then mixing with water and oxidizers. Ferric salt tungsten slurries made by this method provide excellent tungsten polish characteristics for via plug and local interconnect applications.

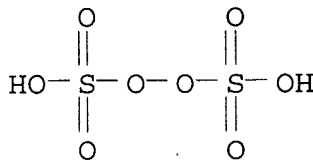
IT 7727-21-1, Potassium persulfate 7727-54-0,
 Ammonium persulfate 7775-27-1, Sodium persulfate
 (chem.-mech. polishing slurry formulation and method for tungsten
 and **titanium** thin **films**)

RN 7727-21-1 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), dipotassium salt (9CI) (CA
 INDEX NAME)



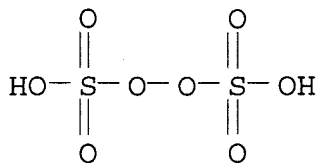
• 2 K

RN 7727-54-0 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



• 2 NH₃

RN 7775-27-1 HCA
 CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
 (CA INDEX NAME)



0 2 Na

- IC ICM C09G001-02
ICS C09K003-14
- CC 49-11 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76
- IT Polyethers, uses
(aliph.; chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin films)
- IT Alkylphenols
(alkoxylated; chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin films)
- IT Abrasives
Dispersing agents
Oxidizing agents
Polishing materials
(chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin films)
- IT Coconut oil
Palm oil
Peanut oil
Polyoxyalkylenes, uses
Vegetable oils
(chem.-mech. polishing slurry formulation and method for tungsten and **titanium** thin films)
- IT 56-81-5, 1,2,3-Propanetriol, uses 57-10-3, Hexadecanoic acid, uses
57-11-4, Octadecanoic acid, uses 57-55-6, 1,2-Propanediol, uses
77-92-9, uses 88-99-3, 1,2-Benzenedicarboxylic acid, uses
107-21-1, 1,2-Ethanediol, uses 110-15-6, Succinic acid, uses
143-07-7, Dodecanoic acid, uses 409-21-2, Silicon carbide, uses
523-24-0, Diammonium phthalate 544-63-8, Tetradecanoic acid, uses
827-27-0, Monosodium phthalate 877-24-7, Monopotassium phthalate
1141-38-4, 2,6-Naphthalenedicarboxylic acid 1306-38-3, Cerium
oxide, uses 1344-28-1, Alumina, uses 2169-87-1,
2,3-Naphthalenedicarboxylic acid 4409-98-7, Dipotassium phthalate
7631-86-9, Silica, uses 7664-93-9D, Sulfuric acid, alkyl esters
7722-84-1, Hydrogen peroxide, uses 7727-21-1, Potassium
persulfate 7727-54-0, Ammonium persulfate 7758-05-6,
Potassium iodate 7775-27-1, Sodium persulfate 7782-61-8,
Ferric nitrate nonahydrate 7783-83-7, Ferric ammonium sulfate
dodecahydrate 10025-77-1, Ferric **chloride** hexahydrate
10139-51-2, Ceric ammonium nitrate 12033-89-5, Silicon nitride,

uses 14047-56-4 15574-09-1, Ammonium succinate 15968-01-1,
 Disodium phthalate 17735-77-2, Ammonium hydrogen phthalate
 22445-04-1 25322-68-3 57402-46-7, Potassium acetylacetonate
 hemihydrate, uses 86891-03-4, Sodium acetylacetonate monohydrate,
 uses 142906-29-4 214209-79-7, Everflo
 (chem.-mech. polishing slurry formulation and method for tungsten
 and **titanium** thin **films**)

L100 ANSWER 8 OF 10 HCA COPYRIGHT 2001 ACS

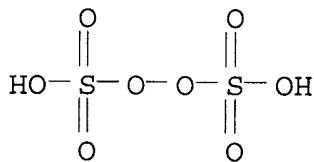
120:150483 Copper tape transfer for high power applications. Kuo,
 Charles C. Y. (CTS Corp., Elkhart, IN, 46514, USA). Proc. SPIE-Int.
 Soc. Opt. Eng., 2105(1993 International Symposium on
 Microelectronics, 1993), 489-93 (English) 1993. CODEN: PSISDG.
 ISSN: 0277-786X.

AB This paper describes a new approach to producing a high cond. Cu
 circuit to meet emerging high power telecommunication and computer
 applications. A Cu tape, made by the ceramic casting process, is
 placed on an alumina substrate and fired in a conventional N furnace
 at .apprx.900.degree.. The **Cu film** can be
 processed by either photolithog. or laser methods to a fine line
 <0.075 mm (75 .mu.m or 3 mils) before or after firing. The Cu tape
 can be cast to any size with a thickness of 20-200 .mu.m (1-8 mils).
 Thickness control can be used to produce films with resistors,
 dielecs., and other thick film processes required to produce high d.
 circuits. The advantages of the present Cu tape transfer over
 direct bond Cu, electrolytic plated **Cu** and thick
film printed **Cu** are compared. The flexible Cu
 tape can be applied to any surface including difficult printing
 areas, such as inside a tube and the wrap-around edges used for SIP
 and DIP products. The characteristics and performance of the base
 metal resistor system covering 8 decades of sheet resistance on
 etched fine lines of Cu tape are also described. Possible
 applications of Cu tape are illustrated.

IT 7727-54-0, Ammonium persulfate
 (**photoetchant**, for copper transfer tape)

RN 7727-54-0 HCA

CN Peroxydisulfuric acid ([$(\text{HO})\text{S}(\text{O})_2$] $_2\text{O}_2$), diammonium salt (8CI, 9CI)
 (CA INDEX NAME)



0 2 NH₃

CC 76-3 (Electric Phenomena)

IT 7705-08-0, Ferric **chloride**, uses 7727-54-0,
Ammonium persulfate
(**photoetchant**, for copper transfer tape)

L100 ANSWER 9 OF 10 HCA COPYRIGHT 2001 ACS

111:31957 Selective **photoetching** of n-gallium arsenide/zinc
selenide heterostructures. Van de Ven, Johan (Philips Res. Lab.,
Eindhoven, 5600JA, Neth.). Mater. Lett., 7(12), 468-72 (English)
1989. CODEN: MLETDJ. ISSN: 0167-577X.

AB It is shown that by relatively simple photochem. etching methods
GaAs can be selectively etched from n-GaAs/ZnSe structures. The
light used for this purpose should have a photon energy between the
band gaps of the 2 materials. Several **photoetchants** for
GaAs, some new and others well-known from the literature, are
discussed.

IT 7664-39-3, **Hydrofluoric acid**, reactions
7775-27-1

(etching with soln. of, selective, of gallium arsenide in
semiconductor structure contg. zinc selenide)

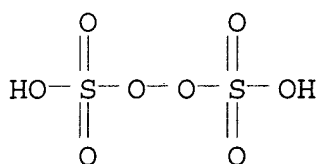
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7775-27-1 HCA

CN Peroxydisulfuric acid ($[(\text{HO})\text{S}(\text{O})_2]_2\text{O}_2$), disodium salt (8CI, 9CI)
(CA INDEX NAME)



• 2 Na

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

ST gallium arsenide zinc selenide structure; photochem selective
etching arsenide; photon band gap **photoetching**

IT 1333-82-0, Chromium trioxide 7647-01-0, **Hydrochloric**
acid, properties 7664-39-3, **Hydrofluoric**
acid, reactions 7664-93-9, Sulfuric acid, reactions
7681-52-9 7722-84-1, Hydrogen peroxide, uses and miscellaneous
7726-95-6, Bromine, reactions 7758-02-3, Potassium bromide,
reactions 7775-27-1 10035-10-6, Hydrobromic acid,
reactions

(etching with soln. of, selective, of gallium arsenide in semiconductor structure contg. zinc selenide)

L100 ANSWER 10 OF 10 HCA COPYRIGHT 2001 ACS

64:32491 Original Reference No. 64:5994g-h Etching solution for **photoengraving** plates. Jones, Rexford W. (FMC Corp.). US 3216873 19651109, 4 pp. (Unavailable). APPLICATION: US 19610804.

AB A soln. for etching Cu **photoengraving** plates consists of 5-50% of a water-sol. **peroxydisulfate**, 1-20% of a water-sol. **chloride** (NaCl or NH₄Cl), and 0.1 to 0.2% of an arylsulfonic acid. The **peroxydisulfate** may be the NH₄ or Na **peroxydisulfate**.

NCL 156014000

CC 11 (Radiation Chemistry and Photochemistry)